



## **Dental Society Reports, from a Reader's Standpoint.**

By WILLIAM H. TRUEMAN, D.D.S., Philadelphia, Pa.

Dr. Frank W. Sage's well written article entitled "Inefficiency of the Dental Society Reporter," in the *ITEMS OF INTEREST* for December, 1902, page 882, invites a further discussion of the topic, selecting the reader's standpoint. I can fully appreciate each point that the Doctor makes in excuse of the inefficiency complained of, having myself done considerable dental society reporting.

In considering the matter, let us first ask, What is the purpose of the published report? Why is a stenographer employed? Why do dental societies concern themselves with sending periodically a report of their proceedings to a dental journal? Why do dental journals publish these reports?

I take it, and have always had this in mind, that the object of these reports is to benefit the profession at large by thus giving them the opportunity of sharing with the members of the society the thoughts, the ideas, and the practical suggestions that have been presented at the society's meetings. It is also, in some degree, an incentive to its members, to see their remarks published in a dental journal. There is always a keener



## ITEMS OF INTEREST

interest taken in a society whose proceedings are regularly published than in one whose proceedings go no farther than its own minute book.

Now, if this is the purpose of publishing the societies proceedings, why put anything more in the report than will convey, concisely, accurately and instructively such information as is of interest to the profession at large? Our verbose brother may not feel satisfied, perhaps, to see his half hour's harangue condensed to a few lines; he may not appreciate that those few lines contain all that is of value in his long rambling talk; and our cranky friend may bitterly complain, and vigorously scold the reporter who has put in plain English his meaningless pet expressions, and straightened out his tangled sentences. They may rally around them their friends—in extreme cases, and make quite a "fuss," because the reporter has omitted so much of one's remarks, and so changed the other's that they fail to recognize them, while he has published every word of Dr. A.'s, precisely as they were spoken. These good friends fail to note that Dr. A. clothes his ideas in well chosen words; that his remarks are to the point, his sentences grammatical, his statements precise, and above all, that he knows when to stop. I have been there—I know what it is.

Another point. The reporter of a dental society holds in his hand the society's reputation as a body of educated gentlemen. By the reporter I mean the one who prepares the report that is sent to the journal for publication. He is the responsible party, and it should be his business to see to it that the report which he prepares fully represents the society's standard educationally, of what an association of professional gentlemen should be. Educated men when speaking in public are not supposed to make speeches having neither beginning, middle, nor end. They recognize and conform to the rules which grammarians have formulated, and when speaking upon professional matters are careful to use accepted, precise and well chosen professional expressions, rather than those which have been for good reasons long since discarded.

The stenographer should be accepted simply as an assistant, a mere drag-net or catchall; he cannot stop to weigh words or correct sentences; indeed, unless he be a dentist, the discussion may be to him a mere jingle of words; he commits them to paper mechanically, and may do so correctly, just as a skilled penman may accurately copy a manuscript written in a language which he does not understand. It is the reporter's business to take the stenographer's mass of words and arrange them so as to form a properly written connected story of the society's doings. It is no excuse for him to say, "those are the exact words he used," when attention is called to a paragraph wherein Dr. B. is made to say, "I want to call attention, Mr. President, to a case that come to me yesterday, an exposed nerve in the hindside of a bicuspid with the teeth all jammed together."

Dr. B. is not a scholar, but he is not the ignoramus that sentence would indicate. He is a man with excellent ideas, he is always ready to take part in discussion, and seldom indeed, does he sit down without having said something worth recording. It is his misfortune that he has not learned to clothe his ideas in acceptable language when speaking extempore. Why expose this failing? What possible objection can there be to the reporter's changing that sentence so as to read, "I desire to speak, Mr. President, of a case of pulp exposure in a cavity on the distal surface of a bicuspid, difficult to reach on account of the crowded condition of the teeth." He has undoubted authority to make any changes necessary to bring out with distinctness and precision the speakers' ideas; to clothe them in language that neither they nor the society will be ashamed of; to make his report read smoothly, and tell its story fully without waste of the reader's time, just as an educated professional gentlemen would tell it.

A case in point. Dr. C. took part in an interesting discussion. He was thoroughly posted upon the subject, and is a writer and speaker of more than ordinary ability. When the stenographer's report came to hand, that portion containing his remarks was forwarded to him for correction. When returned, it bore evidence of a careful revision; every statement had been corrected; much had been added and much changed, but the sentences were disconnected. He had taken notes of the previous speaker's remarks, and had, seriatim, commented upon them. The reporter in this case rewrote the entire matter, and by changing the order of the remarks made a well connected, instructive story without altering by one jot the thoughts and ideas of the speaker. Had this not been done, the report would have been marred by a half page of disjointed sentences, and the reader would have lost the best part of the discussion.

There seems to be an impression that the society reporter should carefully guard the speaker's individuality—whatever that may mean. Undoubtedly he should be careful, very careful, to faithfully report the thoughts, ideas and suggestions of the speakers. It is no concern of his—within wide limits—whether they are right or wrong, nor whether their views agree or conflict with his own. It is his business to record them as they are given, but this, permit me to suggest, does not require the printed page to mimic our stuttering friend's halting words, nor yet that our foreign brother's remarks, laboriously expressed in an unfamiliar tongue, should appear as though spoken by a circus clown. It does not require that the unfinished sentence should be left unfinished, with nothing about the unfinished end to suggest the termination. What good would that sentence do the reader? The society reporter, if competent

## ITEMS OF INTEREST

and faithful, can, in most cases, carry out the thought and complete the sentence. If unable to do this, why not omit it?

Furthermore, the reader cares but little for the laudatory expressions with which so many speakers begin their remarks. They are very pleasant to the essayist; they are encouraging; they are generally deserved, but, as soon as spoken they have accomplished all the good they can do, and are out of place on the printed page, as is much other matter that is excellent and in order during the progress of the meeting.

In conclusion, before sending his report to the dental journal, let the reporter imagine himself a reader a thousand miles away, to whom every speaker is a stranger, and who has no further interest in the report than to know what the society is doing to advance professional affairs, and to know what progress it has made. Let him then carefully revise his report, and make it as he would like it to be if he were that reader.

The educational value of a well written society report can hardly be overestimated. If the writer is competent, able to sift the wheat from the chaff, quick to recognize and able to correct faulty expression; if he is well informed regarding accurate, precise and refined professional technics; what a mighty influence he may have in elevating the educational standard of the society which he represents, and the profession to which he belongs.

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### A New Mallet for Gold.

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By Dr. A. T. BIGELOW, St. Paul, Minn.

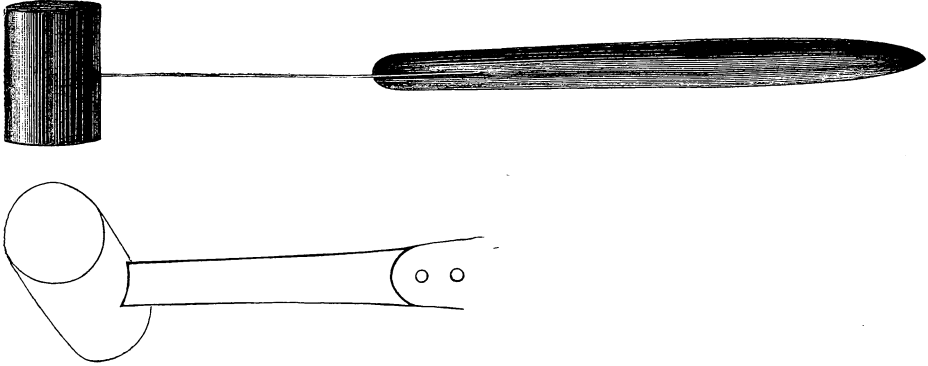
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It has long been a desideratum among operators who use a hand mallet to get the blow delivered without any additional weight from an assistant's hand, an exceedingly difficult requirement.

One skilled in the use of the mallet, by grasping the handle delicately, may measurably effect the purpose, but even then the wobbling of the hand leads to many a glancing and imperfect blow and naturally to faulty condensation of the gold. To overcome these objections, a single piano wire was tried for the upper half of the mallet handle, but there was too much side movement; then it was doubled, with better results, and finally I selected a spring of tempered steel of a proper degree of width and thickness to give an effective and elastic blow with less pain and jar to the tooth and its environment. Sometimes when operating I have signaled to my assistant to change to a stiff handled mallet; uniform and immediate manifestations of uneasiness and discomfort on the part of the patient followed in every case.

After about three years use in my own practice, I am convinced of the utility and *kindliness* of the invention. Practically an assistant grasps the handle firmly, and after a little preliminary training, by a slight turn of the wrist can rain blows of precision upon the impacting instrument second only to an electric mallet.

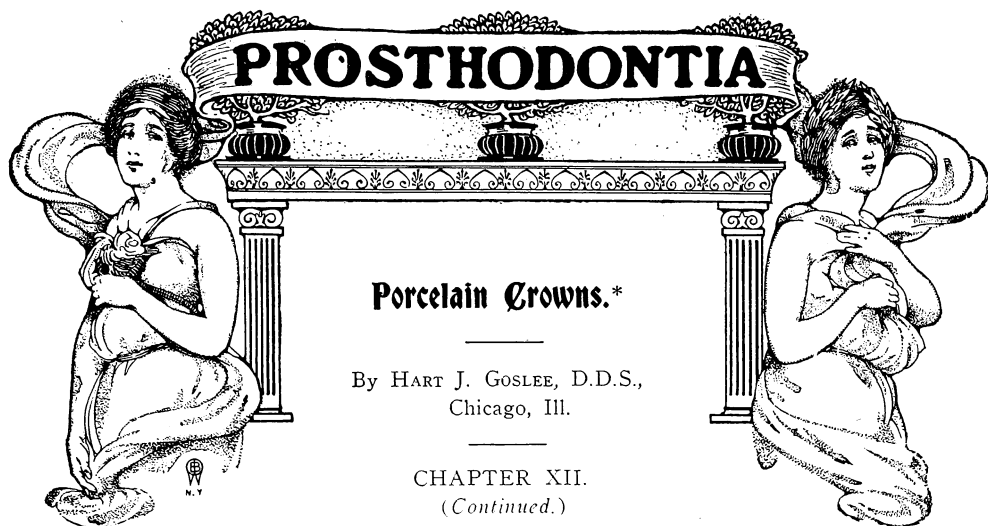
On consultation with patent attorneys in Washington, they found that one Heinrich Wiedmann, of Nuremburg, Germany, had secured



Letters Patent No. 281217 on a hammer July 10, 1883, which, in their judgment, anticipated mine.

The object of Heinrich Wiedmann's invention was, however, wholly different—to lessen the shock of a heavy hammer to the hand wielding it; mine to lessen the pain and jar to the object struck. Under the circumstances I was informed that a change of purpose of invention was not patentable, and therefore only a design patent was attainable which would run for seven years. Thinking an invention of this character is of sufficient importance to interest the profession, I have forwarded this brief account of its inception and perfection.





Porcelain Compounds: Composition; Silica, Feldspar, Kaolin, "Flux," Coloring Matter. "High" and "Low" Fusing "Bodies": Comparative Advantages. Shrinkage, Fusing Points. "Gum Enamel" "Bodies." Requirements for Crown and Bridgework. Manipulation of Body: Preparation of Crown, Selection of Color, Mixing "Body," Applying and Building. One Grade of "Body." Variations in Shading; Use of Oil Colors; Contouring and Carving. Primary "Bake." Final "Bake." "Foundation" and "Enamel" "Bodies." Precautions Incident to Fusing. Supporting Crown in Furnace. Placing Crown in Furnace. Heating Furnace. Fusing: Tests, Porosity. Furnaces: Electric Furnaces, Gasoline Furnaces, Gas Furnaces.

### Porcelain Compounds.

With the rapid development of this class of work, a demand has been created for the production of porcelain compounds which possess qualities better suited to the requirements of *manipulation* and *color* than was characteristic of those which were formerly used, and which had been especially prepared for continuous gum work.

This latter grade of material, as originally compounded by Dr. John Allen, and later by Dr. S. L. Close, in the absence of anything better, was quite commonly used, and, when more finely pulverized to admit

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## PROSTHODONTIA

of being carved with greater accuracy and expediency, it served the purpose so well as to be, to a great extent, responsible for the growth and development of this class of work to the degree of its present successful attainment.

As it was prepared in only one grade and color, however, the demands created by the possibilities of this work soon induced other manufacturers to so alter and improve upon these materials as to furnish compounds which would be somewhat less refractory, and which would more nearly meet the requirements, with the result that several products are now prepared in different grades and varying colors.

**Composition.** These various compounds are supplied in powder form, and are known as "bodies," "enamels," and "gum enamels." They are composed of silica, feldspar, kaolin and a suitable "flux," and are colored, or tinted, with metals or metallic oxides.

**Silica.** Silica is the dioxide of silicon, a very refractory and practically infusible substance found in the form of agate and flint. It is the base of all true porcelain "bodies," and imparts *structural strength* to them.

**Feldspar.** Feldspar is a double silicate of aluminum and potassium. This material is somewhat less refractory than silica, and is incorporated for the purpose of imparting stability to, and increasing the translucency of, the compound.

**Kaolin.** Kaolin is the hydrated silicate of aluminum. This is a very fine grade of clay, and is a most essential ingredient, being incorporated for the purpose of imparting stability of form by holding the particles together, and thus facilitating the moulding and carving of the mass into the desired shape.

**"Flux."** The "flux" is usually composed of the carbonates of the alkaline metals, sodium and potassium, though in some classes of compounds the oxide of lead is also much used.

The quantity and nature of the "flux," and the manner of its incorporation determines the fusibility of the former refractory ingredients, and the tensile strength, or resistance to fracture, of the mass when all are fused together.

**Coloring Matter.** The coloring matter employed for the purpose of imparting the required variations of shade must necessarily be more or less *high fusing* in character, in order that the color, or tint, may not be dissipated, or burned out, in the fusion of the compound.



## ITEMS OF INTEREST

While the coloring matter itself has practically no influence upon the fusibility of the compound, the color imparted is, however, materially affected by the degree of heat required. For this reason, metals, or metallic oxides, are used for this purpose, in which the basal shades imparted are, approximately, as follows:

Yellow,	Titanium.
Brown,	Iron.
Blue,	Cobalt.
Gray,	Platinum.
Pink (gum enamel),	Silver and tin in combination with gold (purple of cassius).

The colors and tints characteristic of the different "bodies" are produced by the use of these in various compounds, of equally varying proportions, but the exact formula and methods of procedure are of special interest to the manufacturers only, and are usually more or less carefully guarded by them.

### "High" and "Low" Fusing "Bodies."

The several varieties of "body" now prepared may be classified into two distinct grades—the so-called "high" and "low" fusing, with the line of common distinction between them being based, approximately, upon the fusing point of pure gold.

An intelligent analysis of the comparative qualities and advantages of the two classes of "body" demands a more or less limited familiarity with the composition of these compounds, and with the characteristics of their respective ingredients.

Silica being the most refractory and infusible substance, it might be commonly supposed that a "body" capable of being fused at a lower temperature than another would necessarily contain less of this ingredient and more feldspar and kaolin in proportion.

Such an assumption would be correct if the "flux" played a less conspicuous part in the reduction, but the same relative formula of the three basal ingredients may be used, and yet the fusing point of the resulting compound be regulated by the proportion of "flux" subsequently added to this formula.

But as a "body" must possess sufficient inherent strength, integrity and stability to offer a high degree of resistance to fracture, and must possess translucency, and absence of opaqueness, an *adequate* proportion of these three basal ingredients seems essentially necessary, since each has its place and purposes in the compound, as previously indicated.



## PROSTHODONTIA

This being apparent, if the fusing point is then regulated or controlled by the proportion of "flux," and it is conceded that the latter does not impart to the compound the highest degree of possible strength, in the light of our present knowledge it seems reasonable to deduce that, when a sufficient proportion of "flux" to reduce the fusing point of these refractory materials below a certain point is incorporated, the maximum degree of possible strength is not imparted to, or obtained in, the product.

It, therefore, seems evident that when a maximum degree of strength is to be obtained, such as is required in the construction of crowns, or bridges, where at best the friable material is to assume the full stress of mastication, by direct contact, the compound which will best serve the purpose must be one possessing the integrity and stability imparted by the three basal ingredients to a degree not entirely destroyed by the incorporation of too great a proportion of "flux."

All porcelain compounds *shrink* in fusing in proportion to the degree of their fineness of texture, and the quantity and nature of the "flux" used; and the degree of shrinkage adds to the difficulties incident to their manipulations with certainty, accuracy and expediency.

The "high" fusing compounds shrink from ten to fifteen per cent, while the "low" fusing range from the latter point up to 25 per cent, and some of the *glass* or extremely low fusing "bodies" which contain lead in large proportions even greatly exceed this. There is never any indication for the use of the latter, however, because of their minimum strength, and of their invariable tendency to discolor in the mouth, which may be attributed to the presence of the lead.

All of the compounds are more or less porous, and hence translucent, in proportion to the degree of fineness to which they are pulverized before fusing. Hence, as the lower fusing "bodies" are always reduced to a much finer texture in their preparation, they possess a greater density of structure.

This increased density, however, is due to the more homogeneous coalescence of the particles as a result of the more thorough admixture of the "flux," and is gained at the expense of translucency and stability, since the "flux," beyond a certain proportion, does not add integrity to the mass, but, on the contrary, increases the shrinkage, friability and tendency to globulate in fusing.

The degree of shrinkage is a very objectionable feature in this work, where so large a quantity of body is used, because the resistance to the *contraction* which takes place in the lower fusing "bodies," and which resistance is offered by contact with facing and cap, induces a tendency to fracture which greatly diminishes the strength.



# ITEMS OF INTEREST

A summary of the apparent disadvantages to be found in the "low" fusing "bodies" thus consists in their degree of *contraction*; their *diminished strength and translucency*, and their *lack of stability of form and color*.

These features also make their manipulation with accuracy and certainty more difficult, particularly for the inexperienced, because of the necessity for shutting off the heat at the precise moment at which the proper fusing point is reached, in order to avoid a dissipation of the color, and a loss of the desired form, as a result of their great tendency to become spherical immediately following the definite and exact point of fusion.

For these various reasons, the use of the "low" fusing, or so-called "enamel bodies," or those which contain a large enough proportion of "flux" to reduce their fusing point below that of pure gold, and to decrease the stability of form and color, which are imparted largely by the three basal ingredients, cannot be considered at the present time, as being conservatively reliable for this special class of work.

Furthermore, a series of comparative tests for crushing and tensile strength of most of the various "bodies" now prepared seems to prove conclusively that the most useful and reliable compounds for this class of work are to be found among those which fuse between 2,100° and 2,500° Fahrenheit, with the pyrometer gauged by the fusing point of pure gold, as being 2,016°.

The following table gives the approximate fusing points of most of the various bodies now in common use, as well as of the different makes of teeth, as compiled by Mr. J. F. Hammond, and Dr. W. A. Capon, in the Hammond Electric Furnace:

"Body."	Current.	Rheostat.	Time.	Tem. Fahr.
Jenkins' .....	110 volts.	1st step.	2 min.	1,544
Ash's Low Fusing.....	110 "	1st "	2 "	1,544
Ash's High Fusing.....	110 "	4th "	2 "	1,904
Moffitt's Porcelain.....	120 "	2d "	2 "	2,047
Brewster's Enamel.....	110 "	4th "	2 "	2,084
Consolidated's High Fusing.	110 "	5th "	2 "	2,192
Whiteley's Porcelain.....	110 "	5th "	2 "	2,210
Brewster's Found Body....	110 "	5th "	2 "	2,300
Close's Found Body.....	110 "	5th "	2 "	2,300
White's Porcelain.....	110 "	5th "	2 "	2,300
Parker's Body.....	120 "	5th "	2 "	2,586
Ash and Sons' Tooth Body.	110 "	4th "	2 "	2,264
Sibley's Tooth Body.....	110 "	4th "	2 "	2,408
Dental Protective's Tooth Body .....	110 "	5th "	2 "	2,440

# PROSTHODONTIA

"Body."	Current.	Rheostat.	Time.	Tem. Fahr.
Justi's Tooth Body.....	110 volts.	5th step.	2 min.	2,440
S. S. White's Tooth Body.	110 "	6th "	2 "	2,516
Johnson and Lund's Tooth Body .....	120 "	5th "	2 "	2,586
Luken's Tooth Body.....	120 "	5th "	2 "	2,606
Century Tooth Body.....	120 "	5th "	2 "	2,624
Consolidated Mfg. Co.'s Tooth Body .....	120 "	5th "	2 "	2,624

## "Gum Enamel" "Bodies."

The compounds designated as "gum enamel" bodies contain a larger proportion of "flux" than basal bodies, and consequently fuse at a lower degree of heat, and possess less strength. Hence, when their use is indicated for the purpose of producing an artificial restoration of the gum color, the major portion of the contour of the piece should be made of the basal "body," and the "gum enamel" subsequently applied where necessary, and only for the purpose of imparting the gum color.

Previous to the application of the "gum enamel," the basal "body" to be covered by it should be fused until it presents a fairly smooth and well-vitrified surface. This is necessary, because it is not to be re-fused, and the maximum degree of strength will not obtain until its particles are well coalesced, and all shrinkage has taken place, and if this is accomplished at the time of the fusion of the "gum enamel," the color of the latter will likely be burned out or dissipated, owing to its greater fusibility, and its surface will present innumerable fractures, as a result of the further shrinkage of the base.

A new form of "gum enamel" has been introduced by Mr. Robert Brewster, of Chicago. This consists of a finely pulverized "body," which is mixed to the desired consistency with *oil*, and then painted upon the surface and fused, in the manner previously indicated, in connection with the use of "oil colors."

It would seem that this should prove to be the ideal method, because the same effect, and greater variations in shading, may be obtained, without diminishing the strength or increasing the weight or bulk of the finished piece.

## Requirements for Crown and Bridgework.

A class of "body" possessing qualities adaptable to the maximum requirements for crown and bridgework will thus doubtless belong to the high fusing variety, and should be prepared in *one grade*; of a sufficient variety of colors, and pulverized *only* to a degree of fineness which will admit of being nicely carved. This latter feature is essential, because



## ITEMS OF INTEREST

the shrinkage is increased and the fusing point decreased in any given compound in proportion to the degree of fineness in which it is prepared.

Those which are to be especially recommended are Brewster's "*Crown and Bridge*," "S. S. White's," the Consolidated Dental Mfg. Co.'s and Whiteley's products, all of which are supplied in neat and compact form, in a good variety of colors, quite adequate to the requirements for this work. While good results may also be obtained from the use of Brewster's "*Inlay Bodies*," which consist of *two* grades—"foundation" and "enamel"—the best possible results are doubtless facilitated and afforded by the employment of *one* grade of material throughout the construction of the piece, and no difficulty will be encountered in obtaining the desired *enamel surface* in any of these compounds, if they are fused to the proper degree of vitrification, without the use of any of the lower fusing, or so-called "*enamel bodies*" in conjunction therewith.

### Manipulation of "Body."

That portion of the procedure which involves the manipulation of the "body" requires the most consummate judgment and skill, and, while it is largely true that the *strength* of the finished piece is much dependent upon the *metal construction* which forms the *foundation* for the porcelain, the degree of possible strength may be still further increased by skilful manipulation of the latter, or, as the converse is equally true, it may be diminished accordingly.

When the crown has been taken from the investment, after soldering, it should *first be thoroughly cleaned* in 50 per cent sulphuric acid, in order to insure the removal of all remaining traces of borax or investment material which may cling to it, and which would be apt to interfere with the subsequent fusion of the porcelain; and the presence of borax is particularly objectionable, because it acts as a "flux."

The *surplus* ends of the *dowel* and *pins* should be ground down *smooth*, and so that they offer no obstruction to the contour, and afford no weakening of the porcelain, by extending or projecting into it, thus dividing it through the center, and all *sharp angles* should be nicely *rounded*.

These requirements are imperative, as the "body" should occupy all of the space possible. It will not fuse down close or become attached to unclean or irregular surfaces, and in fusing will usually either draw away from, or fracture over, sharp angles as a result of the shrinkage.

When these precautions have been observed, the crown should be again treated to the acid bath, and then washed freely with clean water; if a *carborundum* stone has been used, care should be exercised to

## PROSTHODONTIA

remove all particles which may cling to, or remain upon, the metal, or facing, as the presence of such particles will invariably cause a *discoloration* of the porcelain.

A close observation of these prerequisites, combined with *scrupulous care* and *extreme cleanliness* throughout the subsequent procedure, will materially increase the chances of securing successful results.

These results will also be greatly facilitated by confining the work to a place especially prepared for such purposes, or to a portion of the work-bench which has been previously cleaned and arranged; all of the necessary instruments and appurtenances to be used should likewise be kept perfectly clean.

When a suitable place to work is thus prepared, **Selection of Color.** and the crown is ready for the application of the "body," its dowel should be grasped firmly between the jaws of a slide pin-vise, which will hold it securely during the building and carving (Fig. 197), and the proper color of "body" then selected.

This should approach the shade of the facing when one is used, or else of the color desired, as closely as possible, and may be accomplished with the use of the shade-guide, which accompanies the various makes of porcelain.

If the exact color cannot be matched, and some variation becomes necessary, a shade *slightly darker* than the facing should be selected, owing to the tendency to *bleach* somewhat in fusing. In this connection, it must be remembered that the *true color* of the porcelain compound will be obtained *only* when it is fused to the *exact* point of complete vitrification, and that it will become lighter in shade as it is carried beyond, or above, this point.

An adequate quantity of the "body," which corresponds in color to that selected on the *shade-guide*, should now be placed upon a clean porcelain or glass mixing slab, *distilled water* added, and then mixed thoroughly with a suitable spatula, until it assumes the consistency of thick cream. The water may be added in the most convenient and expeditious manner, by means of the "dropper," or "pipette bottle," such as is contained in many outfits for this work and which also serve to keep it pure and clean for subsequent use.

Sufficient water to insure the *desired consistency* and *thorough mixing* are quite essential, and any surplus of "body" is not wasted, because it may be replaced in its proper receptacle and used at another time.

Alcohol is sometimes recommended and used because of expediting the evaporation of the moisture from the compound, and thus facilitating



## ITEMS OF INTEREST

the carving of the mass, but this feature, because of usually being too rapid, is more often an objection than an advantage.

The addition of a small proportion of gum tragacanth to the water is also recommended as furnishing a means of adding to the cohesion of the mass after the evaporation of the moisture, and thus facilitating the carving and contouring, but its presence is objectionable, because it seemingly acts as a "flux" in the fusion of the porcelain, and is unnecessary, because the manufacturers usually incorporate a small proportion of starch in the compound for this special purpose.

The use of pure clean water is preferable. It should be *distilled*, however, because the presence of lime or organic matter will have an injurious effect upon the fusion of the porcelain.

*(To be Continued.)*



## **The Porcelain "Jacket" Crown; the Porcelain "Cup" Crown.\***

By F. J. CAPON, M.D.S.; D.D.S., L.D.S., Toronto, Canada.

*Read before the Boston and Tufts Dental Alumni Association, November, 1902.*

It pleases me greatly to be here in answer to your invitation, to sup at the same board and add my feeble efforts to the evening's entertainment. It was requested that the porcelain jacket be taken as my subject, but with your kind permission, I have as you note, extended the title that the paper may reach into other territories, or more properly a greater range of usefulness. I hardly feel in a position to advocate the use of jacket crowns in a general way, as their positive application is somewhat limited. Nowadays one seeks to be a success in all branches of the dental profession, as but few in even the larger cities have specialized any one branch and solely occupy themselves with it. Then under the existing circumstances of a general practitioner, one should be sufficiently versatile to apply the best possible methods to obtain the best possible results, at the same time being capable of meeting all contingencies and dispensing them with satisfaction.

True, you have no doubt been able to meet your every day cases successfully without adding these crowns to your list, but I see no harm in presenting them for your consideration and discussion, as we do not all think alike and where some may find points of commendation, others may find those of condemnation.

Jacket crowns are not new to the profession by any means, as Dr. Land, of Detroit, produced them many years ago, with many other ingenious methods in porcelain, but they evidently have not found favor or they would be better known. Some critics have denounced them as being unfit to be placed in the hands of the general practitioner. It is quite evident in my mind that those who denounce them have not had the proper ideas in constructing them, as to one who has used them with judgment for many many years, they have proven a good friend ("a friend in need") where they are specially indicated. No other crown that the writer knows of can fully take their place, therefore, with me they have deservedly earned a place; they do their duty and do it well.

It is possible to use the jacket crown on any  
**Use of Jacket Crown.** tooth in the mouth and under almost any condition, but the writer would advise such usage to be rather conservative. The easy removal makes any necessary repairing com-

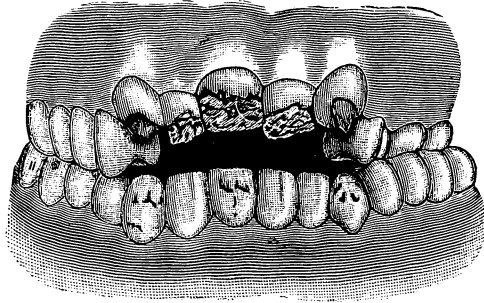
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\*A portion of this paper was read before the Seventh and Eighth Districts of New York, at Buffalo, Oct. 28, 1902.



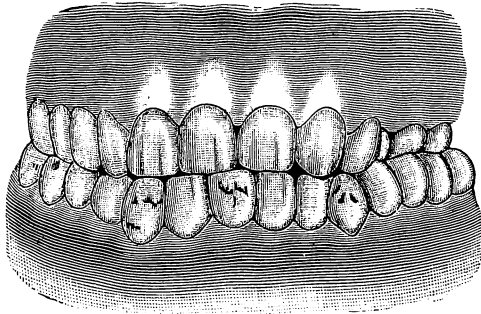
## ITEMS OF INTEREST

paratively simple, which naturally would lessen the responsibility of so using; but their special indication is in broken down incisors, cuspids or bicuspid that have gone beyond any kind of filling, the pulp being intact and not necessarily receded. This crown is also particularly adapted to covering the peg-shaped laterals, as well as in cases where extensive



*Fig. 1.*

erosion has demolished the greater part of the tooth. It comes to my rescue in roots of incisors and cuspids fractured far under the gum (results of hockey, lacrosse and football); roots of anterior teeth badly decayed and under the gum, and in the cases of wholesale crowning of teeth, where it is necessary for the salvation of the pulps. A feature of



*Fig. 2.*

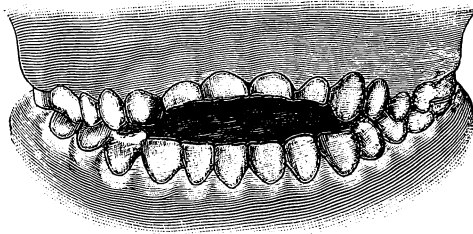
this crown is, that if a pulp were to die, the canals can be entered and treated with no more inconvenience than if the crown were not there.

For the purpose of showing you that the jacket has a reputation for durability which it merits, I have selected two or three rather pronounced cases of long standing.



## PROSTHODONTIA

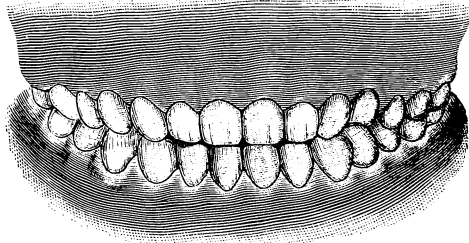
**Cases from Practice.** Fig. 1 is a drawing of models made in 1891, then a young lady of nineteen years. The enamel structure of the incisors and cuspids were very badly pitted, they were also out of position, protruding to such an extent that the patient could only close her lips by forcing them, the space by non-occlusion causing a very decided lisp in the speech.



*Fig. 3.*

After reducing the protrusion, the incisors and cuspids were trephined and covered with porcelain jackets with result as shown in Fig. 2. The feature of this case is that devitalization of a single tooth was not resorted to.

A younger sister of this patient had teeth with similar defective enamel, without protrusion, which were covered in like manner without



*Fig. 4.*

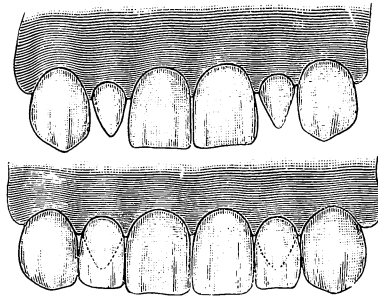
destroying any pulps. Both these patients are seen from time to time, no pulps have died, no repairs have been made and they look splendidly.

Fig. 3 shows a case of extreme erosion; the loss of tooth structure commenced five years prior to the operation, which was in April of 1891. Biting and masticating were painful and difficult from the close proximity of the pulp to the surface. The jacket crown was again used in this case with excellent result, as shown in Fig. 4.

Fig. 5 shows the peg-shaped lateral with result; a class of cases where the jacket is particularly adapted. Other than possibly a slight trimming they are ready to cover without any mutilation.

**The Jacket Crown  
in Detail.**

In preparing the remaining natural crown for the reception of one of these crowns, it is necessary to take away any bulbous portions as for any other crown, and the more perfectly the remainder of the tooth is made parallel the better the adaption of the artificial crown to the neck. The labial or buccal aspect of the tooth to be crowned is ground sloping to the gum margin, taking away at least the necessary amount to allow for the thickness of a porcelain veneer face, leaving of course sufficient covering of dentine to act as a protection to the pulp. At the labio-gingival edge the remaining ledge of enamel is removed, and the edge of the root trimmed under the gum margin. If necessary, the palatal



*Fig. 5.*

aspect may be ground to allow for the thickness of the platinum. The mesial and distal aspects being already broken down by large cavities of decay, little remains for trimming, the incisive edge is shortened to allow for material (Fig. 6).

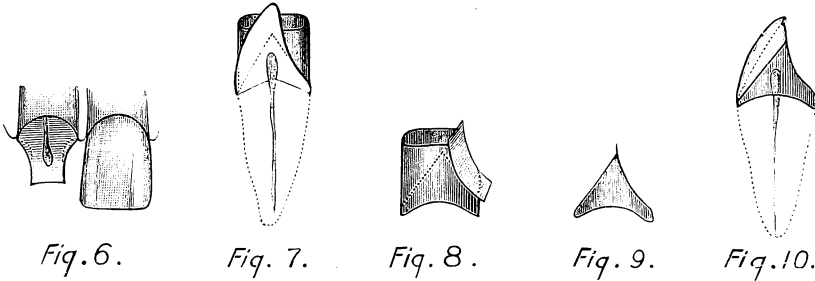
A measurement is taken and a wide band or tube of platinum (about No. 30 or 31 B and S gauge) is made to fit the neck, wide enough to take in the full length of the remaining coronal portion. The platinum tube must have a double or lapped joint, as an abutted joint will draw apart under the high heat.

Now with the tube festooned and fitted into position, the palatal slope of the adjoining teeth and the gum margin are scratched on the outside of the tube. On the inside of the tube, also mark the labial line of the ground surface (Fig. 7), and with a fine-pointed pair of scissors cut out the palatal line on the tube, and solder another piece of platinum on it. This forms the palatal surface of the jacket (Fig. 8). If a heavy, close bite, pure iridium may be used in place of platinum. The surplus is cut

# PROSTHODONTIA

away and the round labial surface of the tube is put to the edge of a corundum stone in the lathe and ground to the marked line on the inside of the tube; with careful grinding and not forcing, a film of platinum will remain stretched across and attached from side to side. The piece is now annealed and placed in position on the tooth, the film is burnished down on the labial surfaces and tucked into any cavities of the tooth that may show, which will give attachment for the porcelain body. It is now removed from the tooth and body applied to cover the labial surface only; this is placed in the furnace and biscuited, which makes it more rigid in handling, and also gives the facing better attachment and lessens the shrinkage in the next baking, the band or matrix (if you like) presenting an appearance as shown in Fig. 9.

The porcelain veneer is selected. These veneers are made for this purpose, but a tooth will answer if it is ground thin until all the platinum pins are gone. If working in the mouth, it is well to have the



body mixed with water made somewhat mucilaginous by gum tragacanth, which will aid in keeping the porcelain veneer in position while removing the matrix from the mouth. It can now be handled with the tweezers and more body added to form contours, as one desires. The crown is now placed at the mouth of the muffle and carefully dried out, allowing any vestige of tragacanth or saliva to burn out before attempting to fuse, as the carbon would gas the work and often cause the facing to jump from its position. After the necessary sandpapering and polishing it is ready for setting in the mouth (Fig. 10). Cement is used as the medium as the adjusting must be done without any forcing, as the delicate edges would be liable to chip or fracture.

When all has been said, good or otherwise, of the porcelain jacket crown, there are cases and places that come under our everyday practice that could be met more comfortably by crowns that are designed to combine strength with the esthetic.

## ITEMS OF INTEREST

So the bicuspid with the "cup" crown or possibly better the "bicuspid" in porcelain will form the subject for the latter part of this paper.

I have taken the *bicuspid* as one requiring our **Crowns for Bicuspids.** attention more frequently than any other tooth, and

I think you will agree with me when I say, this tooth often taxes our ingenuity and patience, whether filling or crowning. When large approximal contours, mesially, distally or both, have been completed, one has a feeling of relief both mentally and bodily. To our great surprise and disappointment "Mr." Bicuspid has returned and confronts us with a recurrence of caries at one of the obscure margins, or worse, the beautiful contour has been dislodged for the want of tooth tissue for retention, to resist the strain of mastication; or even worse yet, the buccal or lingual surface, the only remaining portions of the tooth has become severed, the fracture extending to the walls of the alveolus. These are conditions that confront us continually. Are we always able to meet them in an artistic manner? What I say in regard to the bicuspid may be applied to a more or less degree, to the molar, although it may not be considered quite such a criminal act to cap the molar with gold.

Statistics of the relative liability of teeth to decay give the honor position on the list to the sixth year molars; next come the second molars and then the bicuspids and so on, with the lower cuspids standing alone as sentinels in defiance of the "coccied" army, which from time to time has attacked and demolished the remainder of the line that once stood shoulder to shoulder without fear of such insignificant intruders.

Although molars are more prone to decay, they are of less trouble to us, as in the great majority of cases, when crowning is indicated, a gold cap will cover the broken down tooth, and if properly done, will prove satisfactory, especially as a masticator; but it is the limit line from an artistic standpoint, and to this I will even add exceptions, as in cases of vocalists, actresses or ladies who possess expansive mouths, those who show teeth from molar to molar, porcelain is indicated even in molars.

The exceptions are very few indeed where porcelain cannot be used on first and second bicuspids upper or lower, in single crowns or in abutments to bridges. For ladies, where a fixed bridge is indicated and the bicuspid (the pier for the bridge) is intact, it is preferable in my mind, to remove the pulp and utilize the canal for a dowel and spur attachment as a means of preventing the conspicuous gold cap, the open-face cap or the tearing down of a good natural tooth, which like "humpty dumpty" can never be replaced again.

Every dentist must determine for himself when a tooth is ready or in a condition to require crowning. There is no fixed rule that might be used in determining on the indication; this, of course, is left to the judg-

# PROSTHODONTIA

ment of each operator. I must say the judgment of some is badly wanting, as their efforts confront us continually, not only in our offices, but in the streets, filling us with mortification over such base methods.

It is indeed lamentable that this most valuable method of crowning, with such great possibilities, should have received such abuse as to bring discredit upon the profession. It seems to me there is no more excuse for disfiguring one of our patients, especially a lady, by placing gold caps on any of the ten anterior teeth, than it would be for an oculist to replace a lost eyeball with a gold one, which would be neither artistic nor in harmony with nature.

The writer would suggest that a proper indication for a crown is when the walls of the tooth are so broken down that they give no retentive strength to filling material and no assurance of success to that mode of treatment—then it has gone beyond repair. This may serve as a general definition, but there are exceptions where crowning is quite justifiable, as in cases of disfigurement from a black tooth, irregularity, extensive abrasion or erosion, badly pitted and peg-shaped teeth.

Now there are certain requirements for all crowns, viz.: strength, appearance, occlusion, approximal contour with contact, and with all a general fit. It is of course left to the decision of the operator as to what class of crowns fully meet with these requirements. In the great majority of cases porcelain can fill the bill, but being a vitrified mass and therefore more or less friable according to bulk, there are cases of bicuspid which are presented for crowning that will severely tax the best judgment to get a satisfactory result.

A combination crown of porcelain and metal is of course more desirable than the all-gold cap, which should only be used where the more artistic crown has failure written upon it, then I presume a gold one would necessarily be chosen rather than to lose the root.

In speaking to one not thoroughly acquainted with the uses and strength of porcelain, he is very apt to remark, "porcelain crowns may be all right to look at, but one wants something to masticate upon."

In an article written in the *Dental Review* of September, 1898, Dr. Nyman, of Chicago, made some experiments as to the strength of porcelain which are positive as well as interesting and aston-

ishing. He said:

"In order to ascertain about what strain the average bicuspid and molar porcelain crown would withstand, the writer constructed what he thought was an average size crown of each of these, identical in every way with a crown that would be constructed for practical purposes. They



# ITEMS OF INTEREST

were ground off flat on both top and bottom; the dimensions were as follows:

	Bicuspid.	Molar.
Top to bottom.....	7 mm.	7 mm.
Mesio-distally .....	4 mm.	8 mm.
Bucco-lingually .....	6 mm.	6 mm.

"Justi teeth as facings and Close's body were used. These were then tested at the Armour Institute of Technology in a standard testing machine (made by Riehle Bros. of Philadelphia) by Mr. E. C. Kerr, the professor of mechanical engineering, with the following results:

	Bicuspid.	Molar.
Cracked .....	1,740 lbs.	2,230 lbs.
Crushed .....	2,240 lbs.	4,020 lbs.

"These results seemed astonishing, and as the average crushing force of the human jaw is about 175 lbs., the writer believes that this demonstrates beyond a doubt that the average porcelain crowns have strength sufficient to withstand any pressure that may be brought to bear upon them in mastication."

The condition of the root as a foundation for the proposed crown is the first consideration and as I have already said, often requires rare judgment to determine on a plan.

**Conditions.** No. 1. A typical bicuspid root in a healthy condition with the coronal portion broken down, pulp extirpated, bite normal and of sufficient length for porcelain.

No. 2. Same condition as number one, but bite close and the use of porcelain doubtful.

No. 3. Fractured root caused by the loss of either the buccal or lingual walls of the tooth, severing deeply under the gum margin, beyond reach of a banded crown.

No. 4. Root badly decayed below the gum margin with frail cementum walls.

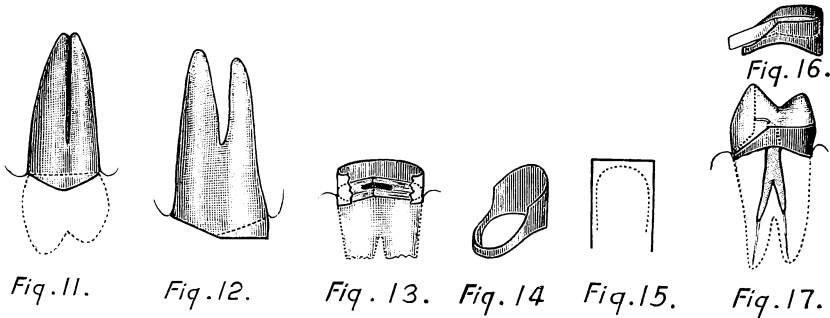
**Condition No. 1.** The first consideration is the mechanical preparation, which for any crown is a most important step and possibly determines between success and failure in the operation, but this step has been so rigidly dealt with by teachers and others that it can be passed by. We will then suppose that the enamel edges have been cleaved and the root trimmed to at least the gum margin buccally, or perhaps slightly below. If occlusion is a consideration, the palatal portion may also be trimmed to the gum edge, following the festoon of the gum for the remaining surface of the root, having sufficient root edge for banding that it will not impinge upon the pericemental membrane. It is common practice to cut the root down con-

# PROSTHODONTIA

siderably at the septum, especially if the bite is short, that a greater body of porcelain may be used on the crown for strength (Fig. 11). But this will cause irritation to the pericemental membrane, with a lameness in the tooth and a falling of the septum in the interdental space; the tooth will have lost its natural surroundings, which cannot be brought back by any artificial means.

If the bite will permit it, a projection of the palatal portion of the root above the gum margin is an advantage for strength and retention (Fig. 12).

Condition number one gives us an indication for almost any porcelain crown with a fair chance of success, but as a bicuspid has a large part to play in mastication, having an occlusal surface with a vertical stress and cusps that give it a lateral stress in two directions, it is well to have a band to accompany the crown as the chances of fracture or dislodgment by the lateral pressures are materially lessened.



For some years the writer has confined himself to an original crown (see *Cosmos*, February, 1902), believing it to be strong, which is an all important consideration, for no matter how beautiful a crown may be, if it is not strong enough to perform its duty, it is worse than useless, as it will be sure to come back with a double responsibility of removing the fractured portion which at times is by no means easy.

Root of course prepared. Having taken the size of the root, a band of platinum (which should have a lapped or covered joint) is made with plenty of width, to accurately fit the root, festooning for the septum. The band should be wide enough so that when it has taken up its proper depth in the free margin the remaining width will stand well above the face of the root. While the band is in position on the root, with a sharp-pointed instrument scratch on the inside of the band the line of the root; also mark on the outside of the band the buccal festoon of the gum line (Fig. 13).

## ITEMS OF INTEREST

With a pair of fine-pointed scissors cut out the buccal half of the band to the marked gum line (Fig. 14), and if the root will allow it, file a little below it; place the band on a sheet of platinum, mark the shape of the band upon it for the palatal two-thirds (Fig. 15), trim with scissors and file accurately to the mark, and fit it to the line on the inside of the band. It is now tacked in position with pure gold or platinum solder, after which, that part of the apron remaining may be pressed down to the buccal portion of the band and the solder complete its course around the band (Fig. 16). Trim off any surplus and file the buccal edge rounding, which allows of a better and stronger extension of porcelain on the band. The pulp canal is now prepared to receive a square iridio-platinum dowel; a small hole is made in the floor of the cap opposite the canal and the dowel is forced home through the hole with the cap in position on the root. The band and dowel are carefully removed together and soldered in their proper relation. The extended portion of the band can now be given the approximal contour with contact to the adjoining teeth, which with porcelain work is just as essential for protection to the septum of gum in the inter-approximal space as for any other work. The shade, bite, and impression in plaster are taken; if the crown is to be completed in the laboratory, it is well in the meantime to cover the root with temporary stopping to keep the gum from creeping over the edge of the root. The selected facing is ground into position, it is then invested and the pins of the facing are soldered to the dowel-head or better to the floor of the cap (Fig. 17). All excess of pins or dowel-head should be removed and the remaining parts nicely rounded; bulk of body is preferable to the platinum ends which invite fracture to that portion of the crown which is weakest. The framework of the crown is now ready to receive the body, which is applied in the usual manner.

That portion of the band projecting above the face of the root forms a "cup" in which the porcelain has its base and gives to it the additional strength required for mastication, so that the liability of fracture of the porcelain is reduced to a minimum. The facings of these crowns give little or no cause for anxiety, as they are made with "block body," the entire face of which is etched to the body of the crown. It is soldered as well. This *porcelain cup crown* can be used to serve as abutments of gold bridges, as solder can find ample attachment on the mesial, distal and palatal surfaces.

*"Root in same condition as number one, but bite close, use of porcelain doubtful."* I have already said that bicusps and molars require a crown that will withstand the force of mastication; the former in my experience are the most difficult to contend with, and the more especially when the bite is



short with the cusp of the lower tooth occluding in a deep sulcus (Fig. 18). As a rule this condition gives but slight indication for an all-porcelain crown, especially if the retention is wholly dependent on a dowel which greatly weakens the already weak portion of the crown. The natural superior bicuspid is prone to fracture more than any other tooth by reason of a deep sulcus, with often a closely occluding and interlocking cusp of the lower tooth; add to this the fact that the main portion of the tooth has been taken away and probably replaced by filling material, and sooner or later fracture of the buccal or lingual wall becomes almost a certainty, which may prove serious if it were severed below the alveolus. (Fig. 18 a-b.)

All manufactured (ready-made) crowns for bicuspid's either have a dowel-head or a hole, which is placed in the center, the weakest part

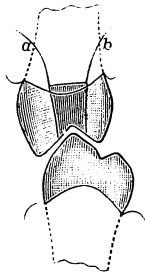


Fig. 18.

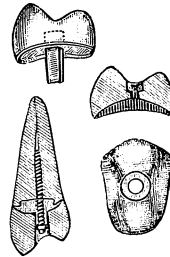


Fig. 19.

of the crown, rendering them almost out of the question for this particular condition (Fig. 19). The cup crown which I have suggested can be made with or without a dowel, and comes to our aid in just these cases.

*Fractured root caused by the parting of either*  
**Condition No. 3.** *the buccal or lingual wall of the tooth severing it*  
*under the gum margin beyond reach of a banded*  
*crown.* To curtail the time I have combined conditions three and four into one, as the procedure in root restoration for a foundation is similar.

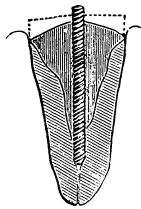
*Root badly decayed below the gum margin, with*  
**Condition No. 4.** *frail cementum walls.* In those roots where there has been such extensive loss of tooth substance that hypertrophied gum overhangs and possibly fills the root, one may grasp at the remains to build on a crown for esthetic effect alone. In conditions three and four the root form is to be restored sufficiently to furnish a good base. It is generally necessary to remove the fungus growth either by the electro-dental cautery or with a knife; at any rate the gum

## ITEMS OF INTEREST

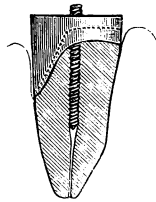
must be pressed back to free the root edge from the overlying gum. The next step is to bring the root from a pathological condition to that of health.

It is very necessary to restore by means of a rigid and insoluble material; good amalgam is best adapted for this purpose, and should be used with the same care that is required to make a good filling. If the edges are accessible, the root is dried, the canals are cleared and tapped for the reception of a screwpost; after placing a small portion of cement on its extremity, it is screwed into the canal. The root is given any retention that is possible to aid in securing the amalgam, which is packed about the post over the face of the root to the gum margin or even higher as the case demands (Fig. 20).

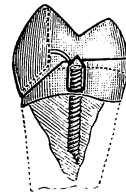
If the root is fractured or decayed considerably below, then a



*Fig. 20.*



*Fig. 21.*



*Fig. 22.*

matrix with an apron to take in the extent of the fracture is required into which the amalgam can be packed. (Fig. 21.) After a few hours the matrix can be removed and Rhein files passed down under the gum to remove any rough edges of amalgam; the importance of this is obvious. We have now an amalgam stump or root-form the external edge of which can be ground to suit the crown as desired. There is no bicuspid crown, to my knowledge, better suited to such a foundation than the one mentioned for the other conditions, but of course no dowel could be used; perhaps a modification of one could be applied, if one thought the retention insufficient by a band only. By trephining the amalgam from around the screwpost, a tube is fitted over the post and pushed through the floor of the cap and soldered, the free end of the tube is pinched together and the pins of the facing soldered to it (Fig. 22).

### Discussion.

While I have not had the experience of Dr. **Burbridge.** Capon, I would like to ask him in regard to the irregular formation of the central, owing to the progress of decay. In the case of the peg-shaped lateral, it is perfectly smooth,

## PROSTHODONTIA

the crown being placed to correct an irregularity. In all the work I have done the platinum fits the tooth perfectly, additional attachment for the porcelain being furnished by an ordinary plate tooth pin running through end of tube.

In regard to strain spoken of by the essayist, it must be borne in mind that two square surfaces will stand a greater amount of pressure before breaking than two bicuspid's with deep sulci occluding in the mouth. Such crowns are very satisfactory from an esthetic standpoint, as I can attest from having five years' experience working on the same general lines as Dr. Capon.

**Dr. Capon.** I said "that those who denounce the jacket crown as not having strength, evidently have not properly understood the making of them," and from the remarks of Dr. Burbridge I can safely hold to the statement made in the essay. If I understand him correctly, the gentleman made a close fitting capsule (so to speak) and depends upon the attachment of the porcelain to the platinum to hold the facing on, which doubtless is weak.

**Dr. Burbridge.** The pin is soldered on the end.

**Dr. Capon.** Oh! I see. But with pins you have weakened it more to my mind and certainly it is much weaker than the one I have described in the paper, with a tube that is nearly as broad as the space the crown is supposed to fill, and a film of soft platinum on the labial aspect burnished on and tucked about the tooth stub (be it peg-shaped or broken down tooth), in such a way as to make powerful retainers for the porcelain. The retention of a jacket need give no anxiety as it has the same retention to a tooth stub as a gold cap.

**Dr. Burbridge.** The band is cut off at the incisive edge as shown on blackboard.

**Dr. Capon.** But you have still in your crown the same amount of platinum upon the neck of the tooth which will alter shade as on the crown in one case as much as the other.

**Dr. Burbridge.** There is such a thin veneer of porcelain that the platinum shows through.

**Dr. Capon.** The thickness of the porcelain has of course something to do with the color. The color always has a part to play in it and one has to work that out for himself.

**Dr. Burbridge.** That is what I have referred to. I have proved it myself in this way. I made the jacket, just as you designed it, but shortened the tooth as much as pos-





## ITEMS OF INTEREST

sible without encroaching on the pulp, thus obtaining a more perfect color, the porcelain being translucent rather than opaque, as where the platinum tube is carried to the incisive edge. I see no difficulty in the platinum running to the incisive edge in using dark color, especially when a blue is desirable, but in the lighter shades that bear on the yellow colors it is as hard to obtain a match as in making the Richmond crown. The part of the tooth to the end of the platinum is perfect in color.

**Dr. Capon.** It appears that we are arguing on entirely different points, as you claim you have difficulty in obtaining proper shade at the incisive edge, but I should think if any difficulty arises it would be at the neck where there is just a thin veneer of porcelain. If you find any tooth crown that cannot be exactly matched, it is simple to apply and burn in a mineral paint on the porcelain crown, which is preferable to having it an oddity.

**Dr. Burbridge.** What kind of paint do you use?

I have used a German paint for a number of years obtained from Ash & Son, but recently I have had splendid results from Brewster's paints. Regarding the strength of porcelain in mastication the stress of the human jaw is about 175 lbs., allow all that and you have still a few hundred pounds pressure to work on. Some prefer a Logan crown. I am showing you a crown that is sure to stand the stress. With the Logan bicuspid or any manufactured bicuspid crowns the weakness is in the center. You do not want the band to go beyond the free margin of the gum. You cannot make use of a wider band without irritation.

**Dr. Burbridge.** I think I must differ with you on the strength: where the bite comes, there is an enormous strain.

**Dr. Brigham.** I am very much interested in all that has been said and think the crown admirable in some cases. With the short biting bicuspids it is a question whether a gold cap, with a porcelain face, would not be fully as strong as one made in this way. I have taken a piece of platinum to fit the end of the root, and baked the porcelain on to that, thus making the porcelain come next to the gum tissue, and there is nothing that the gum will take more kindly to than porcelain, and even if the porcelain rests upon the gum, it will not cause irritation.

I was pleased with the essayist's condemnation of the gold crown, and hope the time will come when some association will take action to censure such practice. Recently I was called to my office by a lady who had a capped tooth. Removing the cap I expected to find a pulpless tooth but found one with only a small cavity. In another case an upper cuspid was capped because the lower had one and the upper tooth had a ten-

## PROSTHODONTIA

dency to wear the lower, so the dentist capped a perfect tooth to prevent wearing a lower cap.

In the way of crowns for bicuspid, where they are so very short, if we had a better form of the Logan crown we could do better work than we do. Many times we have to grind the crown to get a short tooth.

I congratulate Dr. Capon upon the lucid way  
**Dr. J. R. Piper.** in which he has presented his subject.

There are several points brought out in Dr. Capon's paper, that I should like to speak upon, but will first carry his method a little farther and apply it to bridge work where the bicuspid are gone and cavities are in the molar and cuspid teeth. The cavities are shaped for gold inlays and into the inlays are soldered the two ends of an iridio-platinum bar the width of the length of the molar tooth, the bar being bent to conform with the gum, and after soldering to the inlays the middle part of the bar is cut away, so that a narrow upright is left just outside of either inlay and the bar narrowed down leaving only enough for strength. The uprights and bar are for retention of bridge. A platinum jacket is swaged to cover bar and uprights. Bicuspid teeth are baked on to the porcelain jacket and the whole set in place with cement.

This to me is the nicest way of putting in a bridge where the bicuspid are gone and you wish no gold to appear. No trouble has been experienced from these bridges by patients in whose mouths they have been placed. One case is of nearly five years standing, and apparently the teeth are in good condition. This particular bridge, however, was made without the jacket, the porcelain having been carved directly on the bar, the cant being held by two pins in the bar. This makes a weaker bridge but just as artistic.

Dr. Capon spoke of finding crowns in mouths on comparatively sound teeth. While I have not had the misfortune to find good teeth capped with gold crowns, I have found gold caps on teeth that most of us would have hesitated a long time before treating in that way. I do condemn a gold cap when a porcelain one can be used.





## **A Comparative Study of Mandibular Protrusion.**

By Dr. E. C. KIRK.

*Address before The American Society of Orthodontists at Philadelphia, Pa., October, 1902.*

I very frequently find myself the victim of the enthusiasm and energy of the chairman of an Executive Committee. Somebody—I have forgotten his name, and I am glad I have, because I do not wish to bear him any ill will—sent me an invitation to read a paper before this body, couched in such terms that it was almost a “stand-and-deliver” order. I hesitated for two reasons. In the first place because I felt my incompetency to bring before this body of learned specialists anything that might interest them, and secondly because of the demands upon my time, which made it impossible to prepare a formal paper. In my desire to accede to the request I turned over in my mind some of the things that might interest this body and finally evolved something which I have entitled “A Comparative Study of Mandibular Protrusion.” It is a very beautiful title because it has a high-sounding, sonorous turn to it. It is not a paper. It is a study in the mandibular protrusion from a comparative standpoint, by which I mean that I shall endeavor to present to you some pathological data as it were, and you are to do the studying. I have not as yet come to any conclusion myself in regard to the problem, but there are certain facts and phenomena in connection with this matter of mandibular protrusion which have set me to thinking, and I am bring-

# ORTHODONTIA

ing my coals to New Castle, not with the idea of disposing of the coals, but with the hope of getting an expert opinion upon the character of the product.

I have about concluded from my study of the Angle classification of malocclusion, and especially of the scientific accuracy of the basis of that classification, that in so far as occlusion is concerned we have nothing else to ask for as a basis of classification. That is, when we deal with malocclusion of the dentures; but there is another feature in this question of dental irregularities, which it seems to me must be taken into consider-

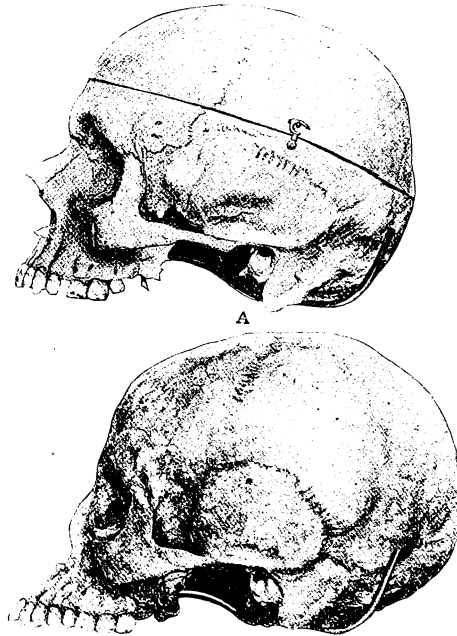


Fig. 1.\*

ation, viz.: certain variations which are manifested as irregularities of position of the dental arches, even though the occlusion may be perfect. I want to show you some of the data which I think we must consider before we can reach a classification of irregularities of the dentures which will be comprehensive.

Let me say that for all of the photographs that I shall exhibit, I am indebted to Dr. Cryer; some of them are probably familiar to you, having been published in his recent book; nevertheless I want to represent them from the point of view of this study.

\*Blocks for Figs. 1, 2 and 3 furnished by courtesy of the *Cosmos*.—Ed.



## ITEMS OF INTEREST

I regret that I failed to get the photograph showing the jaws of the skull shown in Fig. 1 in occlusion. You will have to take it as a fact that in the specimen and as is shown in Dr. Cryer's book, so far as the dental arches are concerned, the occlusion of the two dentures is practically normal. The skull is that of a negro, an African cannibal, showing very pronounced prognathism contrasted with the Caucasian. The skull shows that the dental apparatus as a whole has taken a position forward of what is evident in the Caucasian skull.

In the next specimen, Fig. 2, we have a basilar view of the same crania in comparison and we see very distinctly the moving forward of the dental arches in the African skull. If we take a point in both cases indicated at a line passing through the abutments of the zygomatic arch,



Fig. 2.

you will see that where the line of the arch of the Caucasian skull intersects the palatal vault it is between the first molar and second premolar, whereas in the cannibal the point of intersection of the base of the zygomatic arch is between the first and second molars.

This will recall to your minds the remarks made by Dr. Cryer yesterday, on the tendency of the alveolar borders to move forward or backward, but generally forward upon the maxillary or the mandibular bone. It shows that there is a marked difference as Dr. Cryer has already stated, between the maxillary or mandibular base and the alveolar bone superimposed thereon.

We have in the next photograph, Fig. 3, an exhibit of the mandibles of the same crania previously shown and here we see very distinctly that same tendency of the dental arches to travel forward. If you examine the mandible of the Caucasian, Fig. 3 A, you will notice that the third



molar is partially hidden back of the ascending ramus of the jaw in the angle formed with the alveolar border, whereas in the negro or cannibal type, Fig. 3 B, with pronounced prognathism, it is very far in advance of that angle.

There is another point on which I desire to lay stress and that is the relation of the mental foramen in these cases to the roots of the teeth.

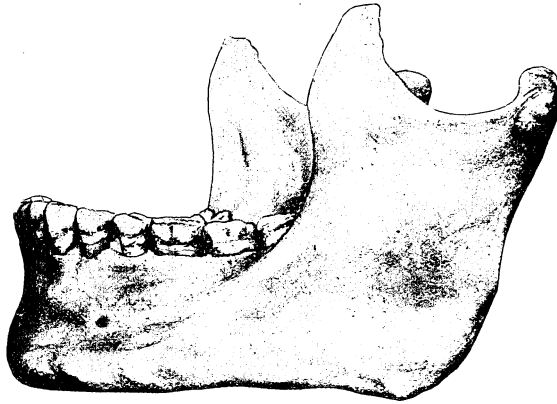


Fig. 3. A.



Fig. 111. B.

You notice in the Caucasian skull the mental foramen occupies a position between the premolars, whereas in the cannibal it is situated below and fairly between the roots of the first molar. And this brings me to the first point, viz.: that in considering the basis of classification of these irregularities due to forward or backward movement of the dentures as a whole, if we were to have some fixed anatomical point from which to measure,

## ITEMS OF INTEREST

it would seem that a good starting point would be the mental foramen, because, being a part of the mandible proper, and not a part of the alveolar border, it has a certain definiteness or fixedness of position in reference to the body of the bone which would give us a reasonably constant anatomical point from which to determine the variations in the position of the dentures which characterize prognathism in some of its expressions.

Fixedness of the mental foramen is shown in another way also referred to by Dr. Cryer in speaking of the distribution of the arteries,

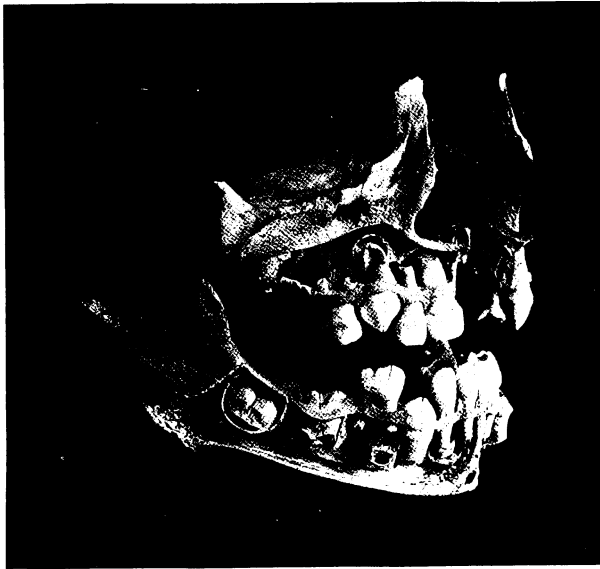


Fig. 4.

veins and nerve supply of the anterior teeth when he called your attention to the recurrent character of the inferior dental canal, showing that the mental foramen was not moved forward in harmony with the development of the alveolar border and it is because of this tendency to fixedness of position that it seems to me to be valuable as a point of anatomical measurement.

As a further study of the relation of the mental foramen to the developing alveolar border, I have a few slides here from Dr. Cryer's col-

## ORTHODONTIA

lection. Here we have the jaws of an infant, Fig. 4, judging from the stage of the eruption of the teeth, probably about eighteen to twenty months old. The cuspids have not erupted in the lower jaw and the second deciduous molar is still almost within its crypt. The child would have the mental foramen situated as it is there shown and for all practical purposes we can say that at that age the mental foramen occupies a position immediately below the mesial root of the first deciduous molar.

In the jaw at the succeeding stage of development a little later, Fig. 5, note the position of the mental foramen with reference to the deciduous denture again. There you see it has tended to take a position posterior to the anterior root; it is now fairly between the roots of the first decid-



Fig. 5.

uous molar and immediately under the developing cap of the first premolar and later we find it takes a still farther posterior position.

We have in this later development the mental foramen occupying a position almost under the distal (posterior) root of the first deciduous molar and somewhat back of the developing cap of the first premolar, Fig. 6; and still later we have the mental foramen occupying a position distinctly between the developing premolars of the permanent denture, which is, we may say, its normal position. Fig. 7. There is its practically fixed position in dentures which are in normal occlusion and orthognathous.

It has been shown that in the developing process of the alveolar

## ITEMS OF INTEREST

process it moves slightly forward upon the mandibular basis, which seems to me to be a sufficient warrant for the very definite conclusion drawn by Dr. Cryer and carried out still further from the histological researches of Mr. Hopewell Smith, that the bone of the alveolar border is merely a temporary tissue subject to a certain developmental force which causes it to change position in the process of development as evidenced by these slides. And we have also seen that there is a fixedness



Fig. 6.

of position with reference to the mental foramen which I think is very evidently marked.

I now want to leave this part of the subject, merely directing your attention again to the suggestion that the relative fixedness of the mental foramen offers, to those studying the subject, a basis of classification of those irregularities of the dental arch which are designated as prognathism, either upper or lower or both, in which latter cases we may have perfect occlusion according to the Angle standard, yet may have facial deformity due to the backward or forward position of both or one of the

jaws as measured by the relations of the denture to the position of the mental foramen.

## **The Jaws of the Bull Dog.**

We have a very marked type of mandibular protrusion in the bull dog. The bull dog is an exceedingly interesting beast from a comparative standpoint. In the first place, the bull dog is an animal that has been especially and artificially bred for centuries with reference to certain peculiarities. You all know the remarkable protrusion of the mandible and the arrest of development of the naso-maxillary region. He is an artificial product and because the ideal of perfection in the correct bull dog type has been the creation of specimens having those

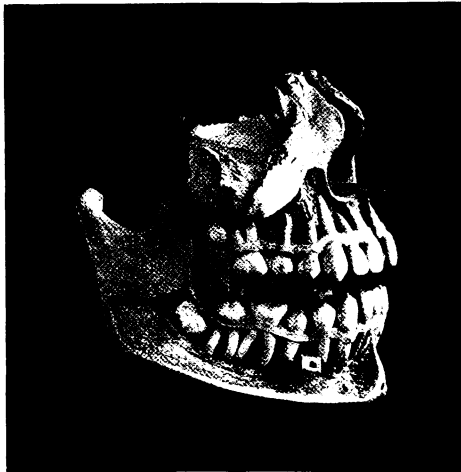


Fig. 7.

marked peculiarities in greatest degree, he is therefore a degenerate: a degenerate that would delight the heart of Eugene Talbot, I am sure. I do not propose to go into a consideration of what it is that has caused the arrest of development of the naso-maxillary region of the bull dog, but there is an arrest of development whatever may be its cause, and there has been artificial production of that peculiarity up to a high degree coincident with an equally marked ratio of degeneracy in other characteristics.

The bull dog is characterized by tremendous courage and pluck. These are his features of which we always think when the animal is mentioned, but from the point of view of efficiency in punishing his ad-

## ITEMS OF INTEREST

versary, he is essentially defective. He does not have in his dental apparatus that perfection of occlusion which we find in the ordinary type of the *canis familiaris*. The bull dog does not have what fanciers call a "punishing jaw." His method of attack or combat is peculiar to himself. If you have ever seen a dog fight and studied it from a scientific standpoint—and that is the only way I will confess to have studied them at all—you will have noticed that the bull dog's tactics are to take hold of and hang on to and wear out his antagonist. He lays hold of a leg, throat or head and there he hangs and shakes and worries his adversary until he has conquered him. If you notice the fox terrier, you will see



Fig. 8.

that his method of attack is like that of the wolf. He does not hold on to his adversary, but he is continually snapping at him, taking pieces out of him, in the endeavor to tear the flesh to pieces.

I have bred bull dogs for some time for experimental purposes and have studied their habits very carefully. Many times in the small hours of the morning I have heard the dogs fighting in the kennels, and as I had some good specimens which I did not want to have ruined, I would go out and stop the fight, which is very readily done, by the way, by sprinkling some pepper or snuff upon the noses of the contestants, and as they are obliged in the course of nature to stop and sneeze they forget

## ORTHODONTIA

about the fight. I have several times observed that no matter how long the quarrel continued and how vicious it seemed to be by the sound and struggles, the result was a matter of very small moment to the bull dogs themselves. That is, very little real injury had been inflicted. I have gone out in the morning and found the kennels presenting a ghastly spectacle, but when I afterward examined the physical condition of the dogs, I would find injuries perhaps only skin deep; and the fight being over they would extend the courtesy to one another of licking each others wounds and were friends again until their difficulties were renewed



Fig. 9.

owing to some difference of opinion that could not otherwise be adjusted between them.

When we come to study the perfect canine denture I want to show you the timber wolf, *canis latrans*. Fig. 8. It is defective in this specimen because the specimen has been mounted with the jaws apart and the warping caused by drying out has disarranged the occlusion. I will show you in another specimen of the dog a denture in which the occlusion is perfect.

## ITEMS OF INTEREST

There you see a denture which is of the true carnivorous type, the shearing type. It is highly efficient for the purposes of its environment. It has a shearing motion perfectly adapted to the cutting of flesh.

I show you a naso-maxillary view of the same skull. Fig. 9.

Here you see the anterior occlusion is almost edge to edge. The idea of the shearing action is carried out throughout the whole denture supplemented by the guiding dowel-like action of the canine teeth.

Another and noticeable feature is the relative proportion of the nasal aperture in this skull as compared with the surrounding structures.



Fig. 10.

The nasal aperture is one through which the animal may breathe large quantities of air. He is swift of foot and his respiration is rapid. He is therefore built so that he can take in large quantities of air rapidly.

**The Greyhound.** We have another animal in which we have the perfect carnassial denture, the ordinary greyhound.

Fig. 10. Here we have a specimen not quite so distorted by the drying-out process. You see the perfect shearlike arrangement of the teeth, the interlocking canines, a typical specimen of the canine jaw, in which there has been no degenerative process at work. We here have the naso-maxillary view of the greyhound, Fig. 11, in which you get a good idea of the relative size of the nasal aperture to the skull as a whole. There is an enormous provision for the rapid in-



## ORTHODONTIA

spiration of large quantities of air necessary for all animals which travel at high speed.

With these types in mind we will go back to the side view of this skull and call your attention to the occlusion. Fig. 10. There you will see the large carnassial molar in the upper jaw occludes in close relation to the distal portion of the lower corresponding tooth. That would correspond with the first molars according to the Angle classification of the human denture.



Fig. 11.

Now we will take up our degenerate. Having gotten, I hope, a sufficiently clear idea of the type of the normal dog; here we have the degenerate bull dog, Fig. 12. Applying, for the time being, the Angle classification or basis of occlusion here, you see that the large carnassial molar in the upper jaw is almost in normal occlusion so far as its position front and back is concerned, with the corresponding tooth below. Here you see the enormous development of the mandible and above the lack of development of the nasal maxillary region.

The bull dog develops this condition after birth. Of course I do not mean to imply that there is no tendency in this direction during the foetal stage because we cannot doubt the conclusion that this developmental peculiarity begins as far back as the coalescence of the ovule with the

## ITEMS OF INTEREST

spermatozoid. It is, however, so little marked at birth that the bull dog puppy has an edge-to-edge bite. I have here the head of a bull dog puppy at birth, and also the specimen of the adult skull from which these photographs were taken is here for your inspection. It is quite evident that the mandibular protrusion is a condition of arrest of development of the naso-maxillary region, due, I am almost tempted to say, to a trophic disturbance, but I do not want to go on record for that, as I do not know that the cause has been investigated. We

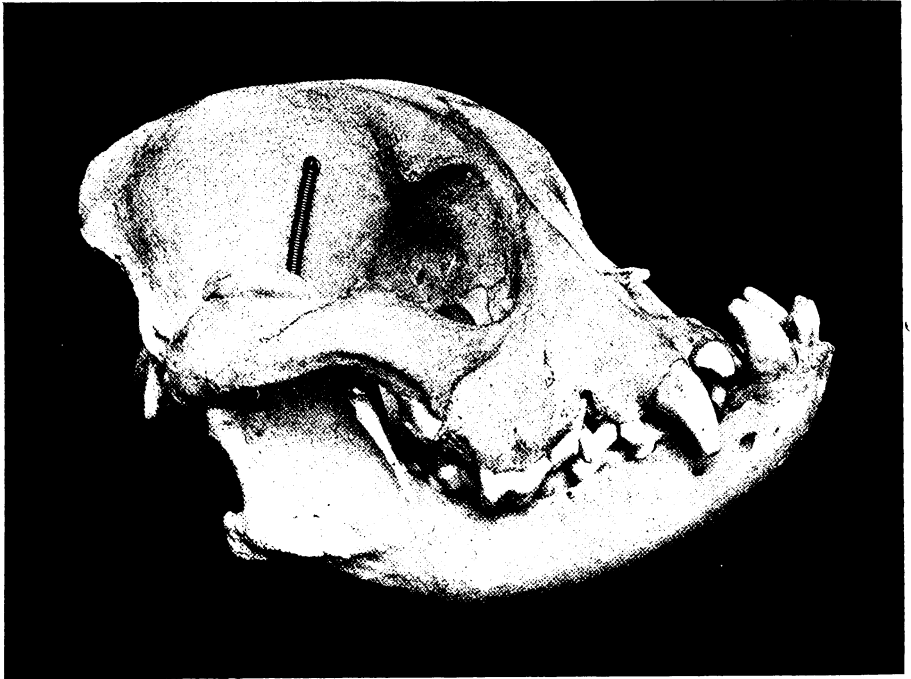


Fig. 12.

do know that as compared with the normal dog we have here a tremendous modification under purely artificial conditions in which natural selection has had no part. It has been done with the greatest care by the fanciers of this sort of animal and they have exercised extreme care to bring it to the condition in which we now see it.

I would call your attention to the upward turn of the lower jaw of the bull dog. The tendency until modified by muscular action is for the

## ORTHODONTIA

mandible simply to protrude. There are many specimens of the bull dog in which you will find a shovel-like lower jaw protruding without the end upturned. From muscular action, however, the lower jaw, acting against the first carnassial molars constitutes a lever in such relation to the actuating muscles that they act on the forward end of the bone and we have as a result this turning up, the modification being due to the extrinsic effect of the muscular power upon the mandible during its process of



Fig. 13.

development which tends to give it the upward turn so highly prized by the fanciers of this particular breed of dog.

Another point to which I wish to call your attention is the relation between the nasal aperture and the rest of the skull, and to recall to your minds that same relation in the skulls previously shown.

Here we have an anterior, Fig. 13, view and you see a relatively small nasal orifice. I have a suspicion that the bull dog tends to be a mouth breather. He has great difficulty in breathing through his nose,



## ITEMS OF INTEREST

and with regard to the nasal cavity the bull dog also shows symptoms of degeneracy.

My observation leads me to believe that we have a perfectly analogous condition in the human being, mandibular protrusion due to the arrest of development of the premaxillary and nasal region. There are many other causes of mandibular protrusion which are manifested simply as a sliding forward of the lower jaw in which we have an obtuse angle formed by the ramus and the body of the bone, and cases are found which show perfect dentures when each denture is viewed singly, but it is the relation of the dentures that is out. There the Angle classification applies perfectly; but with the Angle classification in connection with the position of the mental foramen we should be able to separate in our minds the cases of mandibular protrusion of the human being which are simply due to improperly related mandibular arches and those which are the result of some disturbance of the nasal cavity or the development of the structure of the nasal region.

I have a friend here with me this morning who presents a case of mandibular protrusion. His arches are in such condition that I should say the condition in his case was one purely of deformity of the angle formed by the ramus with the body of the bone. I have brought him here for study and the benefit of your opinions.

I have brought this matter to your attention merely as suggestive. I have made an exhibit of the data which have seemed to me to suggest a possible extension of classification of our cases of prognathism, mandibular protrusion, or of premaxillary protrusion, if you choose, which I believe is worth considering. I shall be glad to have your opinion upon it. The specimens I referred to are here on the table for your inspection. The young gentleman mentioned is also here. I shall be very glad to have you look at his case and see whether you agree with me that it is a case of simple malformation of the angle of the jaw and does not necessarily depend upon any defect in development of the naso-maxillary region.

I thank you very much for your attention.

Some one asked if the pronounced peculiarity of the bull dog is not developed gradually subsequent to birth; in other words, does not the bull dog at birth present the same appearance as any other dog?

Dr. Kirk replied:

Yes, sir, so much so that I have on one or two occasions had bull dogs of the feminine gender escape from the kennels and form a mesalliance with some other type of dog, and it has taken three months of development to determine by the appearance of the pups that such had been the case.

### Discussion of Dr. Kirk's Paper.

**Dr. Cryer.** I have nothing to say except to speak of the shape of the heads at birth. I have raised bull dogs and greyhounds and perhaps a dozen other varieties, even to the miserable little pug,—another degenerate in the head. After the dog is born, if it is a greyhound, the face will elongate after the trait of its ancestors. If it is a bull dog, the upper jaw will be lacking in development.

**Dr. Angle.** In this phase of comparative anatomy Dr. Kirk has introduced an exceedingly interesting subject—a sidelight to orthodontia. Comparative anatomy, I have long believed, is the very basis of all dentistry, and especially of orthodontia, for it is only through a comparative study of the teeth of animals that we can learn of the occlusion of the teeth of man, and the many phases that lead up to their normal and abnormal arrangements.

I believe that if we could be present at a meeting of this Society twenty-five years from now we would find the orthodontists of that day very familiar with the subject of comparative dental anatomy, and that they had profited mightily from this knowledge.

Dr. Kirk's suggestion of using the mental foramen as a point from which to judge, or at least to assist in judging, the relations and proportions of the jaws and dental apparatus to the skull may be a valuable one. To determine some fixed point or line to enable us to judge the extent of the normal and the abnormal has long been a perplexing problem to the artist, the craniologist and the orthodontist. Personally, I do not believe there is a better tangible point than the upper first molar, and taking it for granted that this is right, move the lower jaw backward or forward to be in harmony therewith. But it is quite probable that the upper arch is rarely exactly where it should be. We know that one eye is seldom on a perfect level with the other, and that the lateral halves of the body are different. We therefore have no reason to think that the upper dental arch is more often relatively correctly placed. Yet believing, as I have said, the first molar to be the nearest to a normal fixed point I have selected it as a basis for the classification of malocclusion. But Dr. Kirk's most interesting and excellent paper should furnish us with much to think about. And if it can assist us to better understanding of what is normal and what is abnormal, it will be most valuable to us as orthodontists.

## ITEMS OF INTEREST

**Dr. Kirk.** I came here for information. There is in my belief, a very great distinction to be made between those cases of mandibular protrusion which are due, first, to an arrest of development of the naso-maxillary region, such as is shown very definitely in the case of the bull dog, and that other classification, or class of cases in which there is a protrusion forward of the mandible due to the difference of the angle. The whole question of the correction of facial deformities is bound up in this question. I was looking to the President to specifically take hold of the matter, and in order that he may do so I present this young friend of mine. You will appreciate the scientific interest he has in the matter to come here and serve as critical material for our discussion. I shall ask you to look at him from that point of view.

I think this subject has an important bearing on the question of whether we shall or shall not extract. I have seen many cases of correction of irregularities of the teeth where extraction has been resorted to where I regard it as simply malpractice, from the standpoint of utility; but simply a cosmetic operation had been done.

These are questions, it seems to me, to be bound up intimately in the study of these two classes of cases.

(Dr. Kirk then called the young man forward and asked Dr. Angle: What would you do with this case?)

Dr. Angle stated that before passing judgment upon the proper treatment for the case submitted, he desired to make an examination.

While making the examination, Dr. Brady spoke as follows:

**Dr. Wm. J. Brady.** Some time ago my attention was directed towards this very class of cases to which Dr. Kirk has brought our attention. I have found that the development of the upper and lower jaws are practically independent of each other. There are certain causes which affect the development of the lower, which seem to have no influence upon the upper, and *vice versa*.

Now, one possible reason is that in the upper jaw, all the bones of the face articulate with each other in some manner; the development of one largely stimulates the development of another, in fact the same forces that create development of one create development of all of them, and in that way they are intimately connected. But the lower jaw is not thus attached to any of the bones of the face, and its nerve supply and blood supply are also disconnected. It seems to be a law unto itself so far as development is concerned. We have had considerable talk about the development or non-development of the upper on account of mouth breathing, but nothing has ever been said about the causes of

this peculiar development of the lower. The example before us I would call perversion of development. There is, as we know, a certain type of lower jaw which we may call normal or usual. I will ask Dr. Lourie if he will be kind enough to step out and give us a side view of his head, and we will see what the ordinary kind is. (Dr. Lourie responded as did also others who were afterwards called upon by Dr. Brady.) It has the usual square ramus, a squarely developed body, a type with which you are all familiar. Another illustration of this kind is our friend here, Dr. Summa. If he did not have so much good St. Louis meat over his jaw you could see the same thing. If Dr. Barnes will step up we will use him as a "horrible example." Now, here is a tendency toward development in another direction that is marked by two things, lack of angle of the jaw and protrusion of the chin, of which we have several other examples here in the room.

(The doctor called upon a number of others, commenting upon the formation of the parts of the face under consideration.)

If you will look about the room you will find that there are intermediate variations from the square angle of the jaw, from a very little on up to the condition as bad as shown in the case before us.

Now, what are the causes? I have determined several influences that seem to operate to cause perversion of development, but they all act through a central channel; that is, some disturbance of the nervous function that affects the development; one cause at one time, another at another time seems to produce the same result.

This perversion of development sometimes takes another form in which there is a continued growth of jaw. There seems to be a center of growth somewhere near the region of the bicuspid, and at about the age of 16 or 17 it seems to actively begin work and starts to grow bone. I have had an opportunity to examine some four cases of this kind and in all of them I find they began about the 16th to 18th year, and the bone continued to grow up to twenty-five years or so. The growth is not always confined, however, to the region of the bicuspid, although it usually is. I have a model of a case in which the growth is behind the teeth, yet is continuous and has progressed in the last five years something over half an inch.

What Dr. Kirk has given us is in line with this; but what are the causes of these peculiarities is something for us to study upon long and faithfully. We need a fixed point, as Dr. Kirk has brought out in order to determine when the jaws are in normal position.

I hope next year to be able to show a number of cases of this kind, with photographs of the patients.

## ITEMS OF INTEREST

**Dr. Hagle.**

It is already past closing time, but as Dr. Kirk has kindly brought his patient here that we may all be mutually benefited by a consideration of this very pronounced case of malocclusion, I will hastily give my opinion and then ask to be excused as I have pledged myself to begin my paper promptly at two p. m., and must prepare for it.

The patient possesses one of the most pronounced cases of malocclusion I have ever seen. As you see, it belongs to the third class, or what is commonly known as protrusion of the mandible. I must frankly confess to you that I know really but little that is of value in regard to this whole class of cases; neither do I believe there is much known concerning them or their causes. They are shrouded in much mystery. I have observed, however, in every case tending toward this class that has come to me for treatment where the patients were young, that they were sufferers from enlarged tonsils. I do not know whether or not there is any relation existing between these conditions, but I often think that possibly there may be.

I have never seen a case of this class that seemed to be inherited. Neither do I believe they are degenerates, and I believe it is as cruel as it is ignorant to stamp them as such. Both physically and mentally I believe they will average with the rest of humanity.

The best article yet contributed on this subject was written by a layman, and published in the *Western Dental Journal*, entitled "Jimber Jaw," in the year 1897.

I believe there are no cases of malocclusion so markedly progressive as those belonging to this class. Hence the importance of early and prompt attention being given to them. The cases that I have been most successful with were those that I began early—at seven, eight or nine years of age—shifting and locking the first molars in normal relations, and compelling the latter when the jaws were closed, by spurs closing *behind* metal planes, these planes being soldered to bands on the upper molars and the spurs being attached to bands on the lower molars, as familiar to all of you who have read that portion of my book bearing upon molar retention. The tendency of this treatment is to stimulate the growth of and push forward the upper jaw and retard the movement forward of the lower—the tendency so pronounced in all these cases. And yet when the overdevelopment of the mandible has progressed to the extent shown in this young man's case, I feel almost powerless to suggest anything of much practical value.

Some nine or ten years ago it occurred to me that in such pronounced cases the jaw might be successfully shortened and the occlusion improved or perfected by double resection of the jaw, and I discussed the



plan freely with surgeons and dentists. Within the past four years two cases have been so treated, one resulting successfully, and the other being a complete failure. The latter operation was performed in New Orleans. However, I do not think this failure should reflect against the operation if properly performed. In the case resulting in failure the operation was as badly performed as could well be imagined. In fact, after the third or fourth day no effort was made to hold the segments in apposition, the result being, as might be expected, almost the complete loss of the jaw by necrosis. The sections in this case were made, unfortunately, at the angle of the jaw.

I believe the time will come when this operation will be of common occurrence, and recognized as one of the permanent, standard operations of surgery, and one conferring most pronounced benefits, but it can never be a successful operation by the reckless, ambitious experimenter.

It is the utmost folly to attempt the correction of such pronounced cases by means of chin cap and headgear. We may possibly, however, thanks to the Baker anchorage, improve the occlusion slightly in a case like this, but even the maximum of tooth movement could not possibly restore the teeth in this case to normal occlusion. A case like this has progressed beyond what might be regarded as merely malocclusion, and is rather in the realm of a pronounced bone deformity, and, it seems to me, should be treated accordingly.

I want to express my appreciation of what has  
**Dr. Kirk.** been said. I do not feel altogether sure that the talk of Dr. Angle quite covered it. I was very profoundly impressed on one occasion when I was superintending the making of a portrait, in which I was endeavoring to bring out certain points. I would say, Please make that place a little lighter, here, producing high light here and raising the color one or two grades, will do what I want. The man invariably did produce that effect, by putting in a little darker shade below it, never putting in a higher color. It may or may not be true, but while Dr. Angle was speaking I had in mind that experience, and the question occurred to my mind as to whether what he has called a failure or arrest of development in that nasal region might not be an optical illusion. As I view the case I cannot see that there is over-development of the mandible but rather a faulty development of the mandibular angle.

I want to say in reference to Dr. Brady's statement, that we are to explain the degeneracy or arrest of development as due to neurosis of some sort. I think that is very dangerous ground. It may be true, I do not say it is not, but I think we are not in a position to say it is true.

## ITEMS OF INTEREST

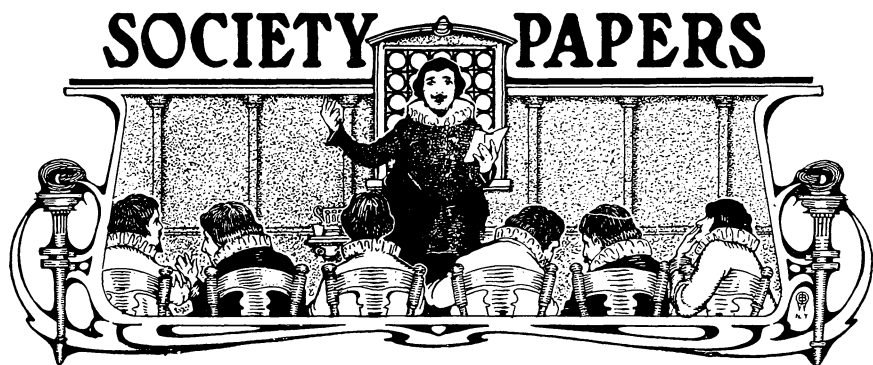
If it is failure of nutrition, it is just as fair to say that it is due to the fact that this young man has not eaten some particular kind of food.

That impression was made at the time of the coalescence of the ovule and spermatozoid of the male and female elements that resulted in the independent organism. That this is true is demonstrated by the fact that I can make that impression on the greyhound by breeding into the bull dog. What it is I do not know. I am reminded of the case of Mrs. Partington who went to the family physician and said, "Won't you tell me why it is that so many people are born deaf and dumb?" And he said, "It is simply because they are brought into the world deprived of the power of speech and hearing," and she said, "My! what it is to have a physical education! Why, I've asked my old man about that thing many a time and all I could get out of him was 'kase they is.'" I do not think that saying it is neurosis, explains the case. It is true there is failure of potential of some sort, but that that is the proximate cause I do not think we are in a position to say. It is something farther back than that, probably something connected with the original protoplasmic impression.

I wanted to convey the idea that whatever the  
**Dr. Brady.** ultimate cause may be, it operates through this one point, the disturbance of the nerve function. I don't go farther back than that. Whatever the cause may be, it operates through that point and that is as far back as we can safely go.

Degeneracy is not ever a cause of anything, but  
**Dr. Kirk.** it is a result. What I wish to bring out and record is my belief that we are not yet in a position to say just what is the cause of the arrest of development; or in other terms, the failure of the nasal maxillary region to develop in these cases.





## Bromo-Chloron, the New Disinfectant.

By D. W. BARKER, M.D.S., Brooklyn, N. Y.

*Read before the Second District Dental Society, December, 1902.*

It is my great pleasure and good fortune to introduce to you this evening, and through this society, I hope to the profession at large, a new and powerful agent in the battle we are constantly waging against disease. The name given to it by its discoverer, Dr. W. H. Birchmore, of this city, is "bromo-chloron," or by way of explanation, the hypo-bromo-chlorite of lime. This name, bromo-chloron, which has been copyrighted, is chosen because it emphasizes the important fact that it combines bromine and chlorine and leaves the unessential fact of the lime out of sight.

This is an entirely new combination of these elements and has been fully protected by its discoverer. Lest any of my hearers should get the idea that this is a preparation of chloride of lime, I will give a brief explanation of its chemistry.

### Chemistry of Bromo-Chloron.

When  $\text{Cl}_2$  (gaseous free chlorine) and  $\text{Br}_2$  (gaseous free bromine) are allowed to act on almost dry slacked lime (calcium hydroxide  $\text{Ca. 2 O.H}$ ) they react jointly, forming a double salt, with the conventional formula  $\text{Cl. Br. 2 O.Ca}$  or  $\text{Cl. Br. Ca.O}_2$  or with the constitutional formula  $\text{Ca} \begin{smallmatrix} \text{O.Br.} \\ \text{O.Cl.} \end{smallmatrix}$ . This salt is a hypo-bromo-chlorite of lime.



## ITEMS OF INTEREST

The term salt is here used in a chemical sense. It is a salt in theory but few will ever see it in a crystalline form. It has been crystallized by evaporating it *in vacuo* over sulphuric acid for the purpose of demonstrating it to be a true double salt. But the process is difficult, costly and for all practical purposes unnecessary.

The reactions which take place in making bromo-chloron are peculiar and complicated in the extreme and are not well understood, but this explanation will suffice until the facts are better known than at present. The lime is of importance only so far as it forms a link by which the rest are as it were fastened together. This peculiar salt forms a solution in water to almost any extent, indeed water dissolves more than its own weight. Like all hypo-salts it is very unstable, breaking up at the least hint of any foreign acid. Even such weak acids as carbonic acid and the acid which forms in the mouth from the not to be prevented fermentation of the food, the acid made by the bacteria of dental caries, and the like, the acid made in the "ripening" of cheese, will do the same as well as the "acid air" of a brew house. When broken up, the lime being a powerful base, attacks the new acid and nascent bromine and chlorine are freed to destroy any bacteria or any animal matter present either directly, or by the formation of nascent oxygen.

At the same time the solution has not the least effect upon living animal membranes. **Therapeutic Effects of Bromo-Chloron.** Mixed with cocaine-muriate, it has been used as a disinfectant in ocular surgery with admirable results.

Curiously enough, when decomposed by  $\text{CO}_2$  the effect is to free not only bromine and chlorine, but oxygen also, thus giving at one and the same instant the effect of bromine, chlorine and nascent oxygen.

The chief claim for its use in preference to anything else in my opinion is to be found in the fact that it confines its action to dead matter. While sulphuric and carbolic acids and the like, undoubtedly destroy dead matter, they also attack living matter, assailing even living tooth substance, while this new reagent will not attack the tooth substance nor anything living and *animal*.

Its advantages then are these, when compared with other disinfectants: as compared with sulphuric acid and carbolic acid, it never attacks the teeth or lips or gums; in common with them, the new salt destroys bacteria and burns up all sorts of dead material. As compared with sodium and potassium, sodium dioxide and the like, while these do not attack the teeth they do attack the soft tissues and bromo-chloron does not. In one word it seems to me, I may truly say, that this new reagent has every advantage of all the other reagents and disinfectants without any of the obvious defects of any.

Bearing in mind that bacteria simply cannot live in its presence, it seems to me there is a wide range of usefulness for this agent in our work. It is non-irritant, non-escharotic, and non-toxic. It is colorless\* and almost odorless and tasteless. Foul odors are at once destroyed. Many uses will readily occur to your minds, but I will only mention the two which occur daily in the practice of all of us. As a disinfectant of putrescent root canals, it is, I think, far superior to anything now in use. I am of course familiar with the use of sulphuric acid in putrescent canals and I am aware that it will do some things that bromo-chloron will not. For instance I refer to its solvent power in opening up obstructed canals due to the fact that it does attack tooth substance. But sulphuric acid leaves something still to be done as is proven by the foul odor which still remains after its use. The bromo-chloron leaves not a trace of that odor. I have been using it for about six months for this purpose and always with entire success. Invariably the canal is so clean and sweet that it may be filled at the second sitting. I have sealed it up in such canals and never had one show any unfavorable symptom.

Dr. Flagg once said he thought the use of sulphuric acid in putrescent canals the greatest advance that had been made in that line of work in the last twenty years. In all seriousness I may say I believe the introduction to bromo-chloron to be another equally as great.

The other use to which I referred is the treatment of abscess. To illustrate: Last summer a gentleman while absent in the country had the misfortune to have the pulp in the lower left bicuspid die. He abandoned his vacation and came home, went to his physician who lanced the abscess, which by that time had fully developed. A week later I saw him, and found the swelling somewhat subsided, and the abscess freely discharging pus. After opening and cleaning the root canal with bromo-chloron, I flushed the abscess thoroughly through the fistula with bromo-chloron. I discharged several syringefuls into it, until not a trace of pus remained. (I may remark in passing that no precautions were taken to prevent the bromo-chloron from flooding the mouth, and in fact it did flood the mouth thoroughly.) At the next visit a week later, the abscess had completely disappeared; the root and tooth were then filled and the patient dismissed; that is, at the second visit, the tooth and abscess having been treated but once. It may be that this was an exceptionally favorable case, because of the recent formation of the abscess, but even so, I think you will agree with me that it was a very quick cure.

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\*When freshly made it is of a pale yellowish color due to the presence of a trace of iron in the lime which it is impossible to get rid of. This bleaches out in a short time leaving the solution colorless. I mention this lest anyone finding it change color might think it had spoiled.





## Cleanliness in Dental Practice.

Dy Dr. A. H. MERRITT, New York.

*Read before the New York Alumni Chapter of Psi Omega, Nov. 21, 1902.*

It is a physical impossibility to maintain asepsis at all times in the daily routine of dental practice. Nor is it always necessary. That the occasion demanding it may often arise none will deny, and the intelligent operator is he who recognizes the occasion, and rises to meet it. But cleanliness—cleanliness in its best and broadest sense—is the corner stone of a successful dental practice. A dentist may be skilful, and possessed of an attractive personality, and yet, because of his indifference to this detail never attain to the full stature of a successful practitioner. And there lies the secret of it in that small word detail. It is only by constantly looking after detail that this condition can be maintained. “Eternal Vigilance” is the price of cleanliness, and that is the reason why many fail. Most men feel (and I think dentists are no exception to the rule), that they were born to do great things, forgetting that in reality great things are accomplished only by the closest observance of detail. It is not necessary that one’s office be in a fashionable residential neighborhood surrounded by all the evidences of prosperity. This will come with gray hairs and old age, if we have been faithful in that which seems least, but it is necessary that it be in a locality easy of access, that it be comfortably furnished and scrupulously clean. This latter requirement necessitates its being thoroughly renovated at short intervals, and that it be carefully ventilated, dusted and put in order daily. This should be done before the day’s work is begun, and again during the lunch hour it should receive a share of attention.

After the patient has left the chair, the instruments that have been in use should be gathered up, taken to the washstand and scrubbed, after which they should be immersed in the solution in which they are to be sterilized and allowed to remain for a few minutes, when they may be removed, carefully dried, and put in their respective places ready for use again. An excellent solution for use in sterilizing instruments and one that is open to few objections, is a 1 per cent solution of formaldehyde. It is colorless and practically odorless. It should be kept covered when not in use, and changed frequently as it deteriorates when exposed to the air. The glass containing warm water (which should be placed conveniently near as each patient takes the chair), should also be removed, washed and placed in a jar containing a similar solution, and be replaced by one that

has been previously treated in the same way. The hot water syringe (that much neglected instrument), should receive the same treatment, as should also the saliva ejector. These will be ready for use with the next patient, and you have the satisfaction of knowing that they are clean and reasonably sterile. This will of course necessitate *keeping* at least two always at hand.

How to keep the burrs clean is a problem which can be solved by always keeping in use two complete sets. Have the set which you have been using removed, mechanically cleaned, disinfected, and ready for use as the next patient takes the chair. Set No. 2 may then be treated in the same manner. To know that your forceps are always sterile at the moment you want to use them, a very satisfactory method, is to keep them constantly immersed in a 20 per cent solution of formalin with borax in excess. This will maintain asepsis, and instruments kept in it will not oxidize. After having been used they should of course be thoroughly cleaned before they are again placed in the solution. In smaller jars kept for the purpose the hypodermic syringe and needles, matrices, nerve broaches and separating files may be kept in this solution where they are always clean and ready for immediate use. This solution should be in glass stoppered jars as it also deteriorates by exposure to the air. Absorbent cotton is also kept most satisfactorily in glass covered jars.

**Office Table  
and Linen.**

A convenient table for use at the side of the chair, and one which presents a very neat appearance, is an ordinary dining-room side table. This can be obtained in either oak or mahogany to match the office furniture. It should be about a yard long, eighteen inches wide, have one or two large drawers, and a very commodious shelf about two and one-half feet from the floor. This latter makes a most convenient place on which to keep the large glass jars containing the instruments, cotton, etc. The top may be covered with a beveled edged plate glass, on the top of which may be kept the tray in which the instruments that are in daily use are sterilized, and many other things that may be in constant use.

The aseptic dental napkin made by Johnson and Johnson is indispensable in any office. When a thicker mouth napkin is desired, which I find often is, a very desirable one can be made from bird's-eye linen. This can be bought in rolls of ten yards for about sixty cents, and can be cut in any size desired. For use over the patient a table napkin about two feet square will be found very satisfactory. If there is one thing in which a dentist should be extravagant, it is in his use of clean linen. Let him always have an abundance at hand, and then use it with a prodigality born of that knowledge. An inexpensive and cleanly cover for the bracket

## ITEMS OF INTEREST

table is one made of white blotting paper. This can be cut to conform to the table and as soiled may be turned over and made to do duty for another day. I know there are those who advocate changing the cover with each patient, but I do not think this necessary, except in those cases where it may be advisable to maintain complete asepsis. This has proven in my hands more satisfactory as a cover than napkins, glass or celluloid. Too often if the armamentarium in the dentist's office were examined it would reveal a miscellaneous, ill assorted lot of bottles, of many kinds, and no settled character, some with paper labels, more without any, and all looking as though they might long ago have been retired and placed upon the pension list to advantage. To say the least this condition of things presents a very untidy appearance and one which will not escape the attention of the observing patient. This can be obviated by replacing them with glass stoppered and glass labeled ones of uniform size. These can be ordered in two or three ounce sizes for about three dollars (\$3.00) per dozen. Larger sizes at slight additional cost.

### **Attention to the Person.**

Care should always be exercised in one's personal appearance. First impressions are often lasting ones, and one cannot afford to be indifferent in this matter. That "the apparel oft proclaims the man" is all too true, and it becomes especially incumbent upon us as dentists that we avoid even the appearance of untidiness. Personally I am opposed to wearing a white duck coat in the office, even though it may have the red cross upon the sleeves. I have a feeling that it detracts from one's dignity, and lends to the office the atmosphere of the shop. I do not wish to appear dogmatic in this, for I know there are many good men who approve of their use.

The hands and nails must also come in for a large share of attention. The frequency with which they are washed, and their contact with plaster of paris tends to dry the skin, and unless care be used, they present a rough and grimy appearance far from prepossessing. I might add here that they should always be washed in the presence of the patient. Not only is it necessary that they be clean, but it is necessary that the patient should know it. But you say all this is not necessary, that no one is so observing that he will note whether all this care has been taken, or will care if they should.

In reply let me cite two cases that recently came under my observation, and these are not isolated ones. One, a woman, left her dentist because his nails were not clean. The other, also a woman, because she was given a glass of water to rinse her mouth with, on which were still the evidences of its having been used by a previous patient. In both instances these were patients whom any one would be glad to number

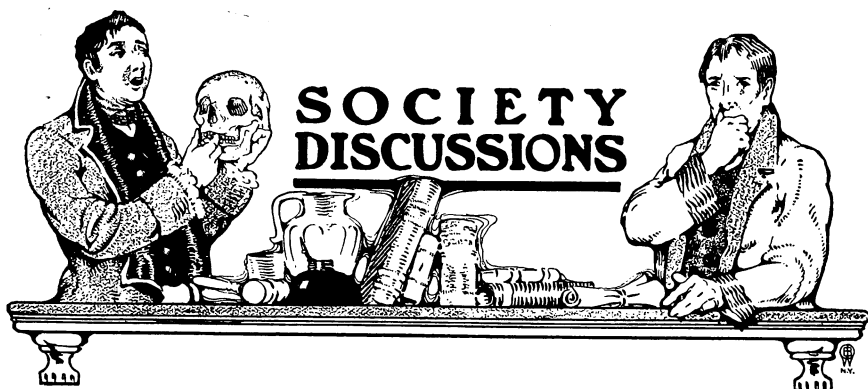


among his clients. One lapse in what we know to be our duty in this direction may cost us a desirable patient. Eternal vigilance must be our watchword. Another may say that it would be impossible to give so much attention to these details, and do much else. I reply, that this may be true, but that there is little here that a well trained assistant cannot do, though in many cases it will probably be found necessary to let her know from time to time that not one detail escapes your observation.

Dentistry imposes so many conditions upon those who would follow it successfully that every one should seek to master as many of these as possible. Our success or failure depends in most instances upon ourselves. Success is an exact science, and is won only by faithfulness in little things.

My object in bringing before you these few ideas is not to present to you something that is new, but to call attention to some of the little things in everyday practice, that are in many instances neglected, because they are considered trivial and unimportant. If what I have said contributes in some small way to making us more thoughtful in these matters as we go about our daily duties, my purpose shall have been accomplished.





## Second District Dental Society.

Meeting of December, 1902.

A regular meeting of the Second District Dental Society was held on Monday evening, December 8, 1902, at the residence of Dr. Kenneth McDougall, 119 Halsey street, Brooklyn, N. Y.

The President, Dr. Hamlet, occupied the chair and called the meeting to order. The Secretary read the minutes of the last meeting, which were approved. Dr. D. W. Barker read a paper entitled "Bromo-Chloron, the New Disinfectant."

### Discussion.

**Dr. Russell.** Will the Doctor explain its action in putrescent canal?

**Dr. Barker.** When it comes in contact with putrescent matter, the nascent bromine and chlorine are set free, and it burns it up.

**The President.** It is of great value to us to know of such a medicine that we can handle with such freedom.

**Dr. Ferris.** How long has the Doctor kept it sealed in root canals?

**Dr. Barker.** A week.

**Dr. Ferris.** Do you use it full strength?

**Dr. Barker.** Yes.

**Dr. Brewster.** We have a long list of medicaments that we have all tried with fair success, and yet all of them have virtues of some kind. I am reminded here of what Dr. Atkinson used to say about this same matter—that we do not

## SOCIETY DISCUSSIONS

know exactly what the medicine does, but he thought the angels helped out.

The feature of this paper that appeals most strongly to me is the fact that it can be used fearlessly. With many of such medicines it is necessary first to isolate the tooth by napkins of some kind and to use the medicament in a very careful way; but our essayist tells us that this can be used without fear, and we do not have to provide napkins, or a tube to exhaust the moisture, or a running stream which will take away anything which might accumulate, or anything to counteract the effect on the living tissues. That seems to me the strongest point in its favor. I am very glad to have heard the paper, and I want to thank Dr. Barker for having presented it. I shall certainly procure some and use it. The essayist also said that the odor that is ordinarily present disappears, and that is another advantage. In those cases, ever since Dr. Harlan, of Chicago, brought forth the use of papain for the digestion of the devitalized tissue, I have followed that method; still even after six weeks sometimes I have found a disagreeable odor, and while meditrina does much to relieve that, no doubt this medicine will dispose of it altogether. After the use of papain, I have had to do a great deal to get rid of the odor. The papain does its work well, and I never fill a tooth nowadays without using it; but I have trouble getting rid of the odor, and I shall make use of this medicament for that purpose.

**Dr. Provost.** Has there been any test made on cultures microscopically?

**Dr. Barker.** The discoverer of bromo-chloron, Dr. Birchmore, is one of the most eminent bacteriologists in this or any other country. He can show you bacteria of almost every disease. He has shown that bacteria cannot live in the presence of this medicine. It is as powerful a germicide as bichloride of mercury.

**Dr. Provost.** What I mean by a test of a culture is an exclusive test. The test of flushing out might be done under exceedingly favorable circumstances by almost any medicament. The surest test would be on the cultures.

**Dr. Barker.** Dr. Barker has asked me to testify to the virtues of this medicine. He sent me a small vial of it, and he wrote me that he did not think it was of full strength—that he had had it in stock for a long time—but nevertheless I tried it, and although my experience was very limited, I can say that in three or four cases where I tried it I was very much pleased. In one very obstinate case I followed out the line of treatment recommended by Dr. Barker, first cleansing the canals with sulphuric acid—by the way,



## ITEMS OF INTEREST

that was 50 per cent solution, twice as strong as I ever used it before—but it did the work effectively. I was very much pleased with the success I had with bromo-chloron.

In conclusion I might say that I intended to have  
**Dr. Barker.** a lot of small vials to distribute to the members gratuitously, as the most rapid and easy way of getting acquainted with it; but the arrangements had not been fully completed for its manufacture and sale. The arrangements are under way, and will probably be completed in a few weeks, and then I shall take special pains to put you in the way of knowing where and how it may be procured. I want to say that this is the first public introduction of this material to any scientific body. It has not yet been publicly introduced in the medical profession. It will be, but we are ahead in this matter. Dr. Birchmore, the discoverer, is a personal friend of mine, and he permits me to make this announcement and introduction of it.

### Incidents from Practice.

It is not often that attention is called in societies  
**Dr. Russell.** to the necessity of more care by the dentist, in regard to the hands and instruments. A case of infection that I recently had to trace up has proved to my mind that we all ought to be more careful than we are. The case was that of a young, healthy woman about twenty-five years of age, who was in the country—not exposed to infection of any kind. She went to a dentist, and had some teeth filled. This dentist was a consumptive in pretty bad shape, and a few days after he finished his work, her mouth became very sore and her teeth loose, and three weeks afterwards she had a hard cough, and rapidly developed all symptoms of consumption. Examination of the sputum and the lungs showed tuberculosis bacilli in the saliva, and a consolidation in the lung. It is generally difficult to trace the case to the man who is responsible for it; but to my mind there are many cases where infection is given by the dentist through his hands or instruments. I think the dentist's hands are often responsible. They do not clean their hands properly. I dare say among the members of this society you will not find a bi-chloride solution in one office out of fifty; and yet dentists handle consumptive cases, and go from one to the other, just washing their hands with soap and water. It is not fair to the patient, and I think it ought to be brought more fully before the dentists.

Would Dr. Russell recommend using the solution of bi-chloride after each patient? What would  
**Dr. Walker.** be the condition of the hands?

## SOCIETY DISCUSSIONS

**Dr. Russell.** If you use alcohol and glycerine between the washings, you can have your hands soft and nice at the end of the day. Sometimes a man will wash his hands ten times in an hour, and yet he will not have his hands very rough. We use it down at the Polhemus Clinic.

**Dr. Hutchinson.** I have a little incident to report, that may not be of much value, but may prove interesting. It was an experience that I never came across before. A patient who was in the habit of coming to me quite frequently for examination, came to my office a couple of months ago with the left superior cuspid showing a pinkish tinge throughout the entire labial surface. I found there was an exposure of soft living tissue. She had been in my office only a short time previously and there was no sign of anything peculiar. I anæsthetized the mouth with chloride of ethyl, and introduced an excavator to see whether it was a fungus growth, or whether it was from the pulp, and I found it was from the pulp. The tooth broke off, and I finally removed the pulp. The tooth had previously been filled with cement to an extreme depth—a depth that would indicate in most cases an exposure of the pulp, and we would expect it to be followed by the death of the pulp; but in this case the pulp had survived and enlarged, and resorption of the dentine and enamel had taken place, until the pulp had exposed itself on the surface.

**Dr. Brewster.** I want to say that I was reading the *Dental Digest* last night, and a case identical with the one Dr. Hutchinson mentions was described there.

**Dr. Ash.** I have something to show, which is not much to be proud of, but it is simply in support of the argument I made at the last meeting, in connection with X-ray work. I endeavored since then to obtain a series of films or negatives which I had taken, and also some prints; but I was unable to get them back from the gentleman who has them at present, as he is making some X-ray data. I was able to pick up this print alone—the only one of teeth which I had on hand. While it is not a very good one, it will show that an amateur, without any experience in X-ray work, and very little experience in photographic work, can get a fairly good result. This case came into my hands, not for this particular purpose, but I discovered the absence of a left lower bicuspid, and I said to the patient: "You have a tooth missing here." It was not at all apparent from ordinary examination or observation. He said he did not know it. I probed down and said: "I believe the tooth is there, between the one with the cap on and the next one." He hardly seemed to believe it, so I took an X-ray of it, and the result is apparent in this picture.



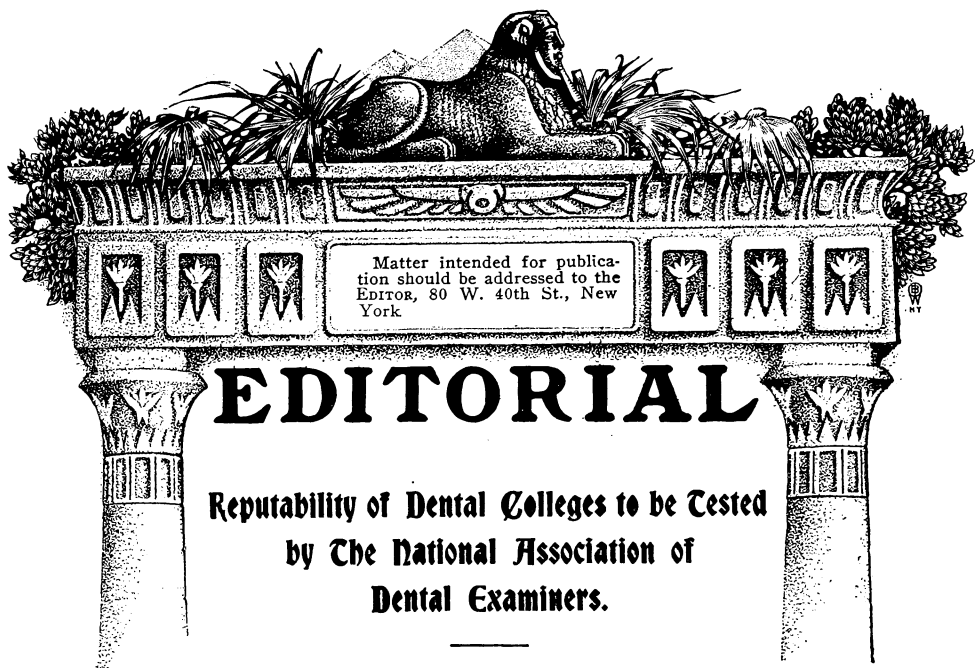
## ITEMS OF INTEREST

**Dr. Van Woert.** I think Dr. Ash entirely misinterpreted the remarks made at the last meeting. There was nothing said by Dr. Custer or myself as to the necessity, on the contrary, there was something said about the non-necessity of there being any experience necessary to get these pictures. If this picture is a success, and he did not know anything about the development, that was good luck. The man you teach to play cards will always beat you the first time, and the amateur generally gets a better picture at first than when he has done it for two or three years. That is in support of what I said at the last meeting. If these pictures are all right, and the gentleman says he knows nothing about the development of them, he must acknowledge that it is good luck, and not good management.

**Dr. Ash.** I said I was a raw amateur, I did not say I knew nothing about it. I had taken some pictures with a snap camera and developed them, and without any further experience I went on with the X-ray work. This picture was taken about three years ago. There was nothing done to it. I did not preserve it for any particular purpose. It was cast aside, but I came across it and brought it with me tonight.

**Dr. Van Woert.** If you will refer to the transactions of the Odontological Society you will see that I said any dentist could make skiagraphs. That is really a better average picture than the professionals take today. That is no compliment; I am just telling Dr. Ash what good luck will do. We made exposures before the Odontological Society, and developed them right there, and they all turned out well; but that was good luck, not good developing, because a man could not do good developing under those circumstances. A large majority of cases where the tube is working fairly well, if thrown into the tray and left alone, for ten or fifteen minutes, will produce a picture; but that is not scientific development.





At the last meeting of National Association of Dental Examiners at Niagara Falls in 1902, a resolution was passed which read as follows:

*"Resolved,* that each Board of Examiners, member of the National Association of Dental Examiners, furnish and present, through its representatives in the annual meeting of 1903, the records and votes of candidates for examination, graduates from recognized dental colleges, who have failed in their examination during the year, and whose marks indicate a lack of proper dental education."

The president of the association, Dr. Charles A. Meeker, has sent out a circular letter to the various Boards, reminding them of the passage of this resolution and urging them to carry out its suggestion. This is a movement which may be fraught with much of good. The laws of many States exact that the Boards examine graduates of "reputable dental colleges." The word "reputable" has been much discussed, and much dissension has arisen in regard to the question whether or not certain colleges might be entitled to such denomination, whether or not the Boards have a right to determine this question. Where the law reads "reputable in



## ITEMS OF INTEREST

the opinion of the Board" the final jurisdiction is with the Board, and it has been decided that in such cases the courts cannot overrule its actions. But Boards of examiners, like other bodies of men are not above the possibility of error, and it will be better for all, that the reputability of colleges should rest upon some more substantial basis than the dicta of special and perhaps inimical Boards, or the more or less prejudiced claims of the college faculties.

The compilation of data, of the kind suggested however, can only be of final service if gathered from many quarters and by many sets of examiners. For example, should an unusual number of graduates from a specified college fail to pass license examinations in a given State, that would not necessarily establish the fact that the college in question was incompetently conducted. It might with equal force point to the incompetency of the Board of examiners, whose sets of questions might meet the educational system of the college or colleges within its State better than that of one from a distance with whose curriculum it had little if any acquaintance. But should it be shown that the graduates of this particular college often failed in Board examinations in several States, it might well be deduced that the college was lax in its examinations, and graduated men not sufficiently educated.

The publication of statistics of this kind, in such form as to be accessible to all interested in dental educational progress, would afford an opportunity for the preparation of valuable data as to the comparative merits of the methods in vogue in the various schools, and if annually made, such examiners' reports would unquestionably prove a spur to the colleges making the poorest showing. College students would not be apt to seek graduation from a college, from whose portals any great number of students were known to emerge and fail to obtain licenses to practice. Contrarily those colleges making the best showing, would naturally attract the greater number of matriculants. Thus would the reports from the Boards become an active influence towards higher educational standards.

Of almost equal importance would be the fact that this data would be available when the reputability of any school might be in question. Should its graduates constantly fail to pass license examinations, any State Board would be authorized in deciding against its reputability. Con-





trarily, if the school could point to the reports of the Examiners Association to show the high records made in many States by its graduates, it would be difficult for a partisan board to attack the institution as disreputable.

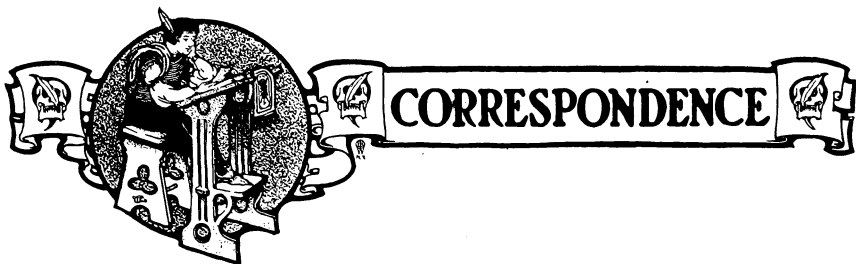
For these and other reasons which might be cited, it is hoped that the scheme formulated will meet with the co-operation of all the affiliated boards.

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### **A Test of Examining Boards.**

In the department of "Book Reviews" will be found a review of a work entitled "Answers to Questions Prescribed by Dental State Boards," which has been prepared for us by one of the ablest critics of dental literature and which should be read by all members of State Boards throughout the country. State dental examiners are in a sense supervisors of the dental education of the country and should be competent for the positions which they assume. Unfortunately, so far as we know, none of these are salaried officers and consequently the incumbents are too often selected through political preferment rather than because of any special qualification for the work. The statements quoted in this review in regard to questions used by examining Boards are a serious reflection upon the Boards and the exceedingly capable manner in which our critic has analyzed some of the questions and answers enumerated, will indicate to dental examiners the necessity of caution in the preparation of their queries as well as the discriminating analysis which should be given answers.





## Celluloid.

Editor of ITEMS OF INTEREST.

In the February number of the ITEMS OF INTEREST Dr. Morgan of Vincennes, Indiana, suggests that a discussion of the merits of celluloid for the construction of artificial dentures be opened. I second Dr. Morgan's motion, as a good deal of work and experiments have been carried on during the last few years by some of our colleagues and manufacturers with the view of improving the quality of the material and the methods of working it. It is unnecessary to go over the history of celluloid; all those among the profession who have been called upon owing to the nature of their practice to construct a reasonable number of artificial dentures each year have been watching more or less closely the ups and downs of that much abused material.

Were it possible for us to construct a perfect gum section denture there would be less necessity to concentrate our attention and energy towards the improvement of celluloid.

However, no matter how skilfully we may grind our sections and how perfectly we may make our joints, the joints will always show and remain an eyesore.

In celluloid we have a material which approaches nearer the color of the natural gums than any of the rubbers now on the market; some blanks now in my possession are almost identical in color with the gum bodies used in continuous gum dentures. Furthermore, it is superior in strength to rubber; that has been proved to my entire satisfaction. A celluloid plate has been worn by one of my patients for a year without accident; the same patient had three sets made the preceding year by three different dentists and had broken each set; of course this may have been due to faulty occlusion or adaptation. To gauge the strength of celluloid as compared with rubber in a practical way, a denture was made, care being taken to imitate the occlusion of the rubber set; no allowance was made for a hard place which was found to exist in the roof of the mouth, with the exception of

## CORRESPONDENCE

a so-called vacuum chamber, the same method having been employed in the rubber plates. This serves to prove the greater strength of celluloid.

If the time required for the construction of artificial dentures is to be taken into consideration, celluloid will then again rank ahead of rubber, as a celluloid denture can be completed in half the time required for the construction of a rubber denture.

Many more claims can be put forth in favor of celluloid, but what has already been said will suffice to prove its superiority over rubber. However, the fact remains that celluloid is not largely used at the present time by the profession. Why? Possibly because most of us get into a rut and refuse to get out of it without a good deal of coaxing.

I am perfectly aware of the fact that the use of celluloid has proved a failure in the hands of a good many practitioners and much dissatisfaction has been experienced, but that was largely due to improper methods.

The moulding of the blank by means of the oil bath or steam processes should be abandoned as the chief cause of the failures. One of the conditions to the success of a celluloid denture is a thorough elimination of the camphor; this can successfully be accomplished with a hot air apparatus, particularly that devised by Dr. J. A. McClelland of Chicago. An accurate impression of the mouth should be secured with plaster, a model obtained from it with builder's plaster in preference to the extra fine. Builder's plaster will give a harder model. Other means of hardening the model may be taken also, although builder's plaster will produce a model sufficiently hard. Before moulding the blank all moisture should be removed from the flaked model; care should be exercised during the moulding operation not to overheat the case, as this will cause the celluloid blank to become brittle. Let the members of our profession who have had failures with their celluloid dentures give this briefly described method a careful trial, and after getting a little experience they will produce an artistic looking, unbreakable, easily made denture which will be free of the camphor odor and will resist the oral fluids just as well as rubber.

In continental Europe a large number of celluloid dentures are made every year and are giving general satisfaction. Proper methods are employed in their construction and better material than that sold on this side of the ocean is used. The "French Company of Celluloid" of Paris makes a celluloid which is far superior to that sold by our dental supply houses, but unfortunately that firm has not offered it for sale to the dental profession yet. Through indirect sources I have obtained a small quantity of it in the shape of sticks and with the aid of a series of dies and counterdies of different sizes, blanks have been made. These blanks I have put aside in a dry place to season. Their exposure to sunlight has



## ITEMS OF INTEREST

caused them to fade slightly and this gives them a still more natural appearance. It is my intention to give my blanks some few years to season and when ready to use them I expect to have a material far superior to any ever placed on the market.

Very little has to be said about repairing celluloid dentures as they rarely need repairs, excepting the replacing of a tooth. This is done very much as with a rubber denture. After removing the wax the filed portion should be rubbed with acetone, a small piece of celluloid placed in position and the case pressed as if moulding a plate. For partial dentures the process is identical, with the exception that the blank is trimmed to suit the case in hand.

Dr. LOUIS F. BOUCHE.

Winnipeg, Manitoba, Canada.

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Editor of ITEMS OF INTEREST.

I will say something to your correspondent T. H. Morgan, D.D.S., who thinks that those dentists who do not favor celluloid have never tried it. I used celluloid for over twenty-five years, and I am sorry that I did, for while it makes a beautiful plate, which pleases the patient when new, it will not last, that is, that has been the situation in the past. There was no improvement in the quality of celluloid in the quarter of a century during which I used it, and the trouble was that it would often scale up, assuming the appearance of scaly horn; would absorb the fluids of the mouth and acquire an odor; it would discolor, and from being a beautiful gum color it would become dark and exceedingly unsightly; would wear away from the back part of the teeth exposing the pins and eventually allowing the teeth to loosen, and there is no practical way of replacing them or of repairing the plate. Not all these defects will appear in every plate, nor at an early date in many plates, but they are liable to appear and will sooner or later injure the man who uses celluloid, unless he gets to new fields of labor, as one man I know of is in the habit of doing every few years. As I said, I am sorry that I stuck to it so faithfully and so long, for I am still practicing in the same section in which I used celluloid for so many years, and I find that it has been detrimental to me. I would have ceased using it much earlier if I had not been continually hoping that I could overcome the defects mentioned above, by high heat, metal matrices, etc., but at last was forced to give up the use of it as much inferior to vulcanite, because vulcanite, although not as strong nor as good a color as a new celluloid plate, is more durable and more satisfactory in the long run.

D. D. LESTER.

Christianburg, Va., February 19, 1903.



# **BOOK REVIEWS**

## **Answers to Questions Prescribed by Dental State Boards.**

By ROBERT B. LUDY, M.D.

Philadelphia, 1902.

Conover Publishing House.

Among the many catechistical works offered to the dental profession this is unique, in purpose and in character.

The compiler, in the preface says: "To pass creditable examinations is the laudable ambition of every earnest student. Many persons having an adequate knowledge of the subject in which they are tested, fail, because of their inability to interpret properly the intents and purposes of the questions to be answered by them. To aid in this, as well as to afford a convenient manual for the general preparation of dental students in their work, is the sole object of this book."

Having collected a large number of questions from different States, it was found that duplications occur ranging from thirty to seventy-five per cent, varying according to the several subjects. Thus a comprehensive knowledge of these questions and answers will serve excellently in the preparation for future examinations before such Boards.

"In order to secure a critical interpretation of the questions, and concise, yet complete, answers to the same, the author has been favored by the assistance of well-known specialists in their several lines, whose competence and experience give to the work a range and value impossible of attainment in the product of a single author."

## ITEMS OF INTEREST

It is a lamentable fact that the statement here made is true. The duplication of questions by State Dental Examining Boards is a severe reflection upon the competency of the men composing them. To so great an extent is this carried, that a critical examination of the questions presented by the Board of one of our foremost States proved the fact that committing to memory answers to questions used during four or five examinations would enable anyone to answer, parrot like, a passing number of any one examination in a series of years.

The fidelity with which some Boards copy their questions is startling. Typographical errors in the originals, so obvious that any one conversant with the subject should recognize them at once, are copied and recopied, uncorrected, from board to board. So carelessly in some cases is the copying done that, seemingly, adjoining but in nowise correlated questions are accidentally united, the beginning of one being followed by the final clause of the next, forming a meaningless and absurd combination. Catechistical works long out of date have been consulted, and questions from them referring to discarded theories are by no means uncommon. The bringing together of so large a collection of Examining Board questions as is contained in this book, in a form so convenient for examination and comparison, by exposing to just criticism those objectionable in form or character will, undoubtedly, do good, especially so if it leads to a weeding out of the incompetent examiners who are responsible for their presence. On the other hand, if this book is accepted by incompetent members of examining boards as a text book, and relied upon to furnish not only questions, but acceptable answers, it will tend to make that which should be a solemn and decorous procedure a contemptible farce. Far too many are elected to these Boards who are thoroughly unqualified by education and temperament for so important a position, and to these this work will be a Godsend. The cut and dried questions with their cut and dried answers; answers having the prestige of being prepared by experts, teachers in reputable dental colleges, will prove a wonderful help to examiners who ask, "By what kind of an articulation is a tooth held in its maxillary, and how is it lubricated?"

The earnest, faithful student, has no use for a book like this. He knows that which he should know, and knows that he knows it. He enters the examination hall with confidence; understands all proper questions, and finds to them acceptable answers from his own well stored mind. To his halting brother, who has failed to profit as he should by the instruction offered, and who feels that he must "cram" for the ordeal; and to a practitioner who through lapse of time has become "rusty," a book like this, carefully written, would prove an excellent and legitimate help. This book, however, is *not* carefully written. The questions are



## BOOK REVIEWS

frequently mis-interpreted, and the answers, many of them, are not full and explicit; on the contrary, they are too frequently incomplete, ambiguous, misleading, or erroneous.

For instance, on page 64, "Describe the method and material you would use to secure a perfect model of the inferior maxilla when fractured."

Answer. "Take plaster impression of parts as found, and make plaster model."

There is here no instruction for placing and holding the fragments of the fractured jaw in position while taking the impression; nor yet, if the "jaw as found" is separated at the point of fracture, is there any suggestion how the model may be made to represent the jaw as it was before the fracture occurred. The question is carelessly worded, it must be admitted, but its obvious intent is to ask how a perfect model may be obtained for the purpose of making an appliance for reducing the fracture, and holding the parts secure until repair takes place; not a perfect model for a surgical museum, as the answer implies.

Again, on page 67. "How are teeth attached to the platinum plate in continuous gum work."

Answer. "After the teeth are ground into position, they are secured in place by an investment; the wax is removed and the platinum plate is so arranged that it is in contact with the plate proper as well as with the bent pins of the teeth. Pure gold is used to solder the parts."

One can hardly imagine a more absurd answer to a plain practical question.

Again, on page 16. "How should a cavity be treated and filled when the dentine is highly inflamed."

Answer. "A sedative should be placed in the cavity covered by a temporary filling."

It would be interesting to know the history of this question. It reads as though copied from an antique quiz-book. It may be, however, that it is a catch-question, intended to test the applicants knowledge of up-to-date dental histology and pathology. Whether dentine can become "highly inflamed" is a mooted question. Late investigations seem to infer that it can, but if this is admitted, the usually accepted diagnostic signs of inflammation require to be very much modified to fit this special case. Let that be as it may, the answer given is an error. How much better to have devoted a few lines to an explanation of the later accepted ideas regarding inflamed dentine, in contradistinction to those formerly held, than to have suggested an answer that any competent examiner would promptly reject.

Whether catch questions are or are not permissible in dental State board



## ITEMS OF INTEREST

examinations is open to discussion. It is contended that a question so framed as to naturally suggest an erroneous answer is unfair. On the other hand, it is argued that such questions are fair, although searching tests of the applicant's understanding of the subject, the real objective of the examination, and are stumbling blocks only to the incompetent, the very class the examinations are intended to weed out. Whether this question originated in ignorance or shrewdness, it has in this instance, undoubtedly, demonstrated its usefulness.

On page 61 we have another instance where the obvious purpose of the question finds no response in the answer. "Give the method of polishing a vulcanite plate on the palatine surface." Answer. "Use fine pumice and brush wheel." Not a word about the "method," notwithstanding the fact that it is the method that is asked for. Fine pumice and a brush wheel may be the means of properly polishing a vulcanite plate upon its palatine surface, or may be the means of rendering useless the denture upon which they are used. A satisfactory answer to this question calls for an understanding of the methods and means of producing upon this part of the plate a smooth, clean surface without impairing its close adaptation to the parts against which it is intended to rest. Tinfoil, liquid silex, collodion, etc., are equally important as a means to this end as is fine pumice and a brush wheel, and their proper selection and use is part of the method by which this portion of the denture is polished.

On page 24 we have other instances of stupidity in appreciating the import of questions.

Question. "When and how should a pulp be devitalized?"

Answer. "A paste of arsenious oxide, hydrochlorate of cocain and an essential oil is generally employed to devitalize the pulp."

The very important part of the question, "when," is completely ignored; as is also the equally important "how." A proper answer to this question calls for an understanding of the various conditions under which devitalization of the dental pulp should be attempted, and also the various means best suited to these conditions. The question is a broad one, an eminently proper one to put to a candidate seeking the right to practice dental surgery. If answered on the examination paper as it is in this book, it should count much more than a missed question in establishing the candidate's incompetency.

The answer to the question immediately following is another like example.

"Give method of treating a pulp canal containing a putrescent pulp."

Answer. "Putrescent pulp is best treated by applications of peroxide of sodium or formalin (10 per cent) followed by temporary dressings of thymol in glycerine until the canal is completely sterile."





## BOOK REVIEWS

The question calls for treatment of the pulp canal. The answer gives a somewhat elaborate treatment of the pulp itself. So far as the pulp is concerned, when found in so degenerate a state, most dentists are satisfied to remove and cast it into the cuspidor, and then pay their undivided attention to the canal. In this answer, the importance of removing the remains of the pulp is ignored. In common with many answers in the book, it is so carelessly worded as to lead one to infer that its author belongs to the class referred to in the preface, "who are unable to interpret properly the intents and purposes of the questions to be answered," and who in addition lack the ability to select and properly arrange words and punctuate sentences to express definite ideas. We have a marked instance of this on page 4, where in answer to the question, "Give method of treating and filling a buccal cavity that extends beneath the alveolar border with adjacent soft tissues congested and bleeding," we are told, "It may be necessary to introduce a temporary filling to press out and relieve the hyperemic condition of the gums, or rubber dam; then a clamp may be employed and the cavity filled at once." "The hyperemic condition of rubber dam" is, we presume, some new complication associated with the filling of these difficult cavities. Whether the applicant for the right to practice dental surgery will gain or lose by using this ready answer should not be an open question. It would be difficult to frame one more unsatisfactory and absurd.

Again, page 62. "How should faults be corrected in the articulation of artificial teeth?"

"If we carbonize the occlusal surface of the teeth of one jaw, they will show the points at which they touch first when articulating the two jaws. This may be repeated until they come evenly in contact."

To carbonize is to turn into charcoal. The "expert" gives us no information how this is to be done, nor yet what *he* understands by this expression, nor yet does he give the slightest intimation that anything more is needed than repeated carbonizing and articulating of the two jaws. These may be inferred; but, should an examiner be satisfied with an answer that leaves so much to be inferred as does this?

In many instances the use of a wrong word makes the answers misleading and confusing. On page 188, the answer to the question, "What desirable qualities should a disinfectant possess for use in a pulp canal?" is an example. "Ability to neutralize various products resulting from putrefactive processes, and the attribute penetrability." Changing penetrability to penetrativeness, makes the answer correct as far as it goes. Some of these errors are undoubtedly typographical, but none the less confusing on that account; and as the book is not provided with a list of these *errata*, the reader is left to guess what they should be. While this

## ITEMS OF INTEREST

is not difficult to one thoroughly conversant with the subjects, it will prove embarrassing to the class for whom the book has been especially prepared. The misspelling or misnaming of a drug or technical expression is a serious defect in a work intended for students, or for those who have not become familiar with their use, and their many variations which have been current from time to time. A single letter, missing or misplaced, will, in many instances, embarrass a novice.

On page 227, the answer to the question, "What are the advantages of annealing alloys for dental amalgam? Describe the process," is an error from beginning to end. It reads: "To reduce brittleness. At times to change the character of the alloy and to secure uniformity of the alloy. The substances are heated and then allowed to slowly cool, the process being the inverse of tempering." This will be all new to anyone versed in making dental alloy. Equally erroneous is the answer to a question on page 241. "In making dental alloy, state the order of fusing the metals so that volatilization of the base metal may be prevented." "Melt the highest fusing metal first. Protect its surface well with borax. Add the other metals in the order of their fusing points, the lowest fusing metal last."

It is singular, and surprising, that the author of this answer should have fallen into the same error as did the author of the question, that of confusing the terms volatilization and oxidation. There is but one metal ordinarily used in dental alloy that is liable to volatilization during the process. Neither the free use of borax, nor yet adding the lowest fusing metal last has the least effect in preventing this. The method given in the answer is antiquated, out-of-date, and always results in considerable loss from oxidation; it is indeed exactly the reverse of the present accepted process. By first thoroughly fusing the borax, then adding the lowest fusing metal, and adding the other non-volatilizable metals in the order of their fusing points, the highest last; and the volatilizable metal last of all and immediately before pouring into the ingot, the loss from oxidation is absolutely prevented, and that from volatilization reduced to a minimum.

It is to be said in their favor that the "experts" who have answered these questions have had many difficulties with which to contend. Many of the questions are crude, and crudely worded; they fail to express the ideas the examiners probably had in mind. Others refer to their authors' own ideas, or to methods not generally known. Others again plainly indicate that their authors were ignorant of the matters to which the questions refer; and some indeed can be answered only by the Great Being who first gave to matter its form and properties. Who can answer, for instance, the question, "Why do we find the quality of cohesiveness more marked in gold than in silver, copper and lead." The answer here given



## BOOK REVIEWS

reads: "Because gold is of a closer texture than other metals. It does not oxidize directly and is probably not volatile. It has the power of welding when cold." As well might we be asked, Why is copper red in color, and silver white? Why is mercury a fluid at forty-five degrees below zero, while gold requires a temperature of over two thousand degrees above, before it assumes the same condition? The schoolboy's answer, "Because it is," would seem to fit this question better than the one given. It is a question whether gold is any more cohesive than is tin; lead welds readily without the use of heat; and all metals are volatile if subjected to a heat sufficiently intense. It may be that the authors of this class of questions know more of such matters than is written in the books; notwithstanding, however, there is much that should be learned from books they have not mastered, as their questions plainly show. We can readily understand that teachers in a dental college, in a work addressed to their students, would hesitate to even seem to criticise these examiners' questions. They are trenching upon debatable grounds, and from their relation to their students and the boards naturally approach the subject cautiously.

Classing the questions under the various subjects, while making the matter of the book much more readily accessible to its prospective readers, has, no doubt, proved an embarrassment in preparing the answers. Some of the questions are practically repeated under different headings, for instance, under Operative Dentistry, a question is asked regarding the method of treating a pulp canal containing a putrescent pulp, and under Pathology and Therapeutics is another, asking how putrescent pulps should be treated. It would have been better to have made one comprehensive answer cover both these analogous questions, and refer the reader from the first to the second, than to have given two, neither of which is satisfactory.

Again, brevity seems to have been too closely consulted. Some answers with a few explanatory words would be quite satisfactory; without them they are meaningless; in some cases absurd.

As we approach those subjects where the questions are merely suggestions from text books, and the appropriate answers quotations, as for instance, "Describe the inferior maxillary bone," there is but little room for error, and but little to criticise.

As a collection of Dental Examining Board questions, the book has a value to all engaged or interested in dental education. To educators it is of interest in giving a clue to the special lines upon which Examining Boards expect their graduates to be well versed; and to the profession at large it is the first opportunity presented to collectively examine and compare that part of the work of the various boards which the questions con-





cern. It would have been more instructive in this particular had the questions been arranged by States.

It would be more useful in the special field for which it was designed, were the answers accompanied by references to standard works from which information upon the subjects of the questions could be obtained. The student who makes use of it as a preparation for his examinations will act wisely by discarding the answers and seeking better and more acceptable ones from modern standard text books. By so doing a far better working knowledge of the subjects will be obtained; the questions and their import will be better understood; and the laudable ambition to pass a creditable examination more likely to be gratified, than by an attempt to memorize the answers presented.

W. H. T.

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## **Anatomy and Histology of the Mouth and Neck.**

By I. NORMAN BROOMELL, D.D.S.,  
Professor of Dental Anatomy, Dental Histology and Prosthetic Technics in the  
Pennsylvania College of Dental Surgery, Philadelphia.

Second edition; revised and enlarged, with 337 illustrations.

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P. Blakiston's Sons & Co., Philadelphia.

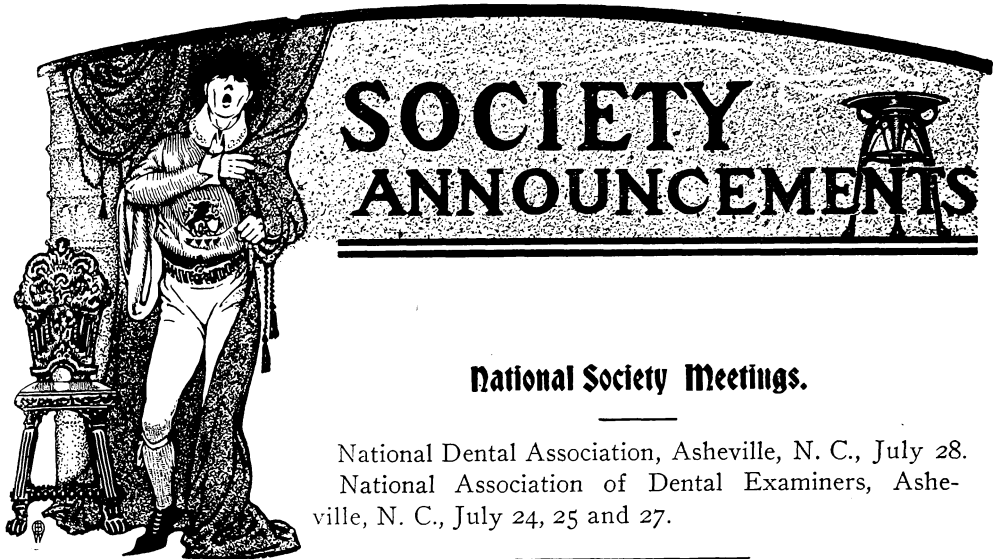
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The second edition of this work, enlarged by seventy pages and fifty-three new illustrations, is produced in the same beautiful and faultless style as that which marked the first edition.

Our lengthy criticism of the work when originally produced leaves little to say, and that only in commendation. An additional chapter on Embryology of the Mouth is especially worthy of commendation. There are noted a number of changes in nomenclature and an elaboration of some of the live topics, and the notes on Alveolodental Membrane are especially worthy of note.

The book will undoubtedly continue to grow in popularity as a standard text book on Anatomy and Histology of the Mouth and Teeth.

M. L. R.



### **National Society Meetings.**

National Dental Association, Asheville, N. C., July 28.  
 National Association of Dental Examiners, Asheville, N. C., July 24, 25 and 27.

### **State Society Meetings.**

California State Dental Society, San Francisco, June.  
 Colorado State Dental Association, Denver, June 16, 17, 18.  
 Connecticut State Dental Association, Hartford, April 21, 22.  
 Florida State Dental Society, Seabreeze Beach, May 27.  
 Georgia State Dental Society, Tallulah Falls, June 9.  
 Idaho State Dental Society, Boise City, June 9.  
 Indiana State Dental Association, Indianapolis, June 30, July 1, 2.  
 Kentucky State Dental Association, May 19, 20, 21.  
 Maine Dental Society, July 21, 22, 23, Kineo-Moosehead Lake.  
 Massachusetts Dental Society, Boston, June 3, 4.  
 Minnesota State Dental Association, Minneapolis, Sept. 1.  
 Mississippi Dental Association, Vicksburg, May 19.  
 Missouri State Dental Association, Kansas City, May.  
 Nebraska State Dental Society, Lincoln, May 18.  
 New Jersey State Dental Society, Asbury Park, July 15, 16, 17.  
 New York State Dental Society, Albany, May 13, 14.  
 Ohio State Dental Society, Columbus, Dec. 1, 2, 3.  
 Tennessee Dental Association, Chattanooga.  
 Texas State Dental Association, Houston, May, 1903.



### **Connecticut State Dental Association.**

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The thirty-ninth annual meeting of the Connecticut State Dental Association will be held in Unity Hall, Hartford, Conn., the 21st and 22d of April, 1903.

The exhibition rooms will be open at all hours during the meeting of the Association, except for fifteen minutes before each session. A night watchman will be in attendance.

Space for exhibitors will be allotted, in order of application, at a uniform rate of one dollar per front foot, table width; not less than six feet to be reserved for any one exhibitor.

Water, and electric power (one hundred and ten volts direct only), will be furnished at one dollar per outlet.

An early reply will assure prompt attention.

There will be no diagrams sent out, as a number might select the same space and it would be almost impossible to settle it to the satisfaction of all. Any space in exhibit hall is good. Yours truly,

G. O. McLEAN, Chairman Executive Committee.

3 Asylum Street, Hartford, Conn.

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### **Central Michigan Dental Association.**

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The Central Michigan Dental Association will hold its next meeting in Grand Ledge, Mich., May 13-14. There will be special features at the banquet and an interesting programme is assured. Arrange to attend.

Remember, at Grand Ledge, May 13 and 14.

Ionia, Mich.

P. L. CAMBEL, Secy.

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### **Kentucky State Dental Association.**

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The Kentucky State Dental Association will hold its annual meeting at Bowling Green, May 19, 20 and 21.

Dr. J. S. CASSIDY, Pres.

Dr. C. R. SHOCKLITH, Secy.

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### **Oklahoma Dental Association.**

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The date of the next session of the Oklahoma Dental Association has been changed from May 5 and 6 to May 12 and 13. Session will be held at Oklahoma City, O. T.

Norman, Okla.

P. H. PENDELTON, Secy.



## **Maryland State Board of Dental Examiners.**

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The Maryland State Board of Dental Examiners will meet for the examination of candidates for certificates on Wednesday and Thursday, May 6 and 7, 1903, at the dental department of the Baltimore Medical College, N. Howard Street, Baltimore, Md., beginning at 9 a. m. Candidates must pass a written examination in operative and mechanical dentistry, anatomy, physiology, pathology, therapeutics and materia medica, chemistry, bacteriology and oral surgery and must insert a gold filling in the mouth and exhibit specimens of prosthetic work properly vouched for. Applications must be filed prior to May 6, accompanied by the fee of ten dollars. For further particulars apply to the secretary.

F. F. DREW, D.D.S., Secy.

701 N. Howard Street, Baltimore, Md.

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## **Oklahoma Board of Dental Examiners.**

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There will be a meeting of the Oklahoma Board of Dental Examiners held in Oklahoma City on May 11 and 12, 1903, for the purpose of examining candidates for license.

All applications must be in the hands of the secretary by May 1 that arrangements may be made for practical work.

A. C. HIXON, Secy.

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## **Sixth District Dental Society of the State of New York.**

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The thirty-fifth annual meeting of the Sixth District Dental Society of the State of New York will be held at Binghamton, N. Y., on May 7 and 8.

F. W. McCALL, Secy.

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## **Kansas State Board of Dental Examiners.**

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The Kansas State Board of Dental Examiners will meet at Kansas City, Kansas, May 4, 5, 6, 7 and 8, 1903. The examinations will be theoretical and practical. Applicants must provide their patients, instruments and material and be prepared to make a plate, crown and insert a gold, amalgam and cement filling. The theoretical examination will be the same as usually given at such times. For further particulars inquire of secretary.

J. P. ROOT, Secy.

Kansas City, Kansas.





## Texas State Dental Association.

The twenty-third annual meeting of the Texas State Dental Association will be held in the city of Houston, May 14, 15 and 16. This meeting promises to be the best ever held in Texas. All members of the profession are invited to attend.

Dallas, Texas.

BUSH JONES, Secy.

## Program, American Medical Association.

### SECTION ON STOMATOLOGY.

*Meeting to be Held in New Orleans, May 5-8, 1903.*

1. CHAIRMAN'S ADDRESS, M. L. RHEIN, New York City
2. Symposium on the Dental Pulp.
  - (a) Notes on Pulp Technique, MARTHA ANDERSON, Moline, Ill.
  - (b) Minute Structures of the Dental Pulp, VIDA A. LATHAM, Chicago, Ill.
  - (c) The Vaso-Motor System, EUGENE S. TALBOT, Chicago, Ill.
  - (d) The Dental Pulp viewed without the Microscope,  
T. E. CONSTANT, Scarborough, York, Eng.
  - (e) Subject to be announced, J. CHOQUET, Paris, France.
  - (f) The Development of Hard Tissue in the Pulp,  
D. E. CAUSCH, Brighton, Eng.
  - (g) Some Historical Facts Contradictory to the Theory of Odontoblasts,  
MICHAEL MORGENSTEIN, Strassburg, Ger.
  - (h) Pulp Hypertrophy of the Teeth, OSKAR ROMER, Strassburg, Ger.
  - (i) Tolerance of Tissues for Foreign Bodies with Special Reference to the  
Pulp and Peridental Membrane, M. H. FLETCHER, Cincinnati, O.
3. Professional Responsibilities, A. E. BALDWIN, Chicago, Ill.
4. The Dental Symptoms of Diabetes Mellitis, HERMANN PRINZ, St. Louis, Mo.
5. Germicides, A. H. PECK, Chicago, Ill.
6. Subject to be announced, G. V. I. BROWN, Milwaukee, Wis.
7. Is the Accomplishment of Reasonable Ideals in Dental Education Near at  
Hand? CHAS. CHITTENDEN, Madison, Wis.
8. The Influence of Local and General Disturbances Upon the Oral Secretions,  
GEO. F. AMES, Boston, Mass.
9. The Dentist in the U. S. Navy, RICHARD GRADY, Baltimore, Md.
10. Methods of Controlling Hemorrhage of the Oral Cavity,  
H. E. BELDEN, New Orleans, La.
11. Empyema of the Maxillary Sinus, O. N. HEISE, Cincinnati, O.
12. Medical and Dental Libraries, ALICE M. STEEVES, Boston, Mass.
13. Orthodontic Facial Orthopedia, W. E. WALKER, New Orleans, La.

M. L. RHEIN, New York City, *Chairman*.

EUGENE S. TALBOT, Chicago, *Secretary*.